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Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age



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**Working with Families to Promote
Safe Sleep for Infants 0-12 Months of Age**

Greetings from Doris Grinspun,

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It is with great excitement that the Registered Nurses' Association of Ontario (RNAO) presents this guideline, *Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age*, to the health-care community. Evidence-based practice supports the excellence in service that nurses are committed to delivering in our day-to-day practice. RNAO is delighted to provide this key resource to you.

RNAO offers its heartfelt thanks to the many individuals and institutions that are making our vision for Nursing Best Practice Guidelines (BPG) a reality: the Government of Ontario for recognizing our ability to lead the program and providing multi-year funding; Drs. Irmajean Bajnok and Monique Lloyd, Director and Associate Director (respectively) of the RNAO International Affairs and Best Practice Guidelines (IABPG) Centre, for their expertise and leadership in advancing

the development of the BPGs; and Expert Panel Chair Elyse Maindonald, Primary Care Nurse Practitioner at the Windsor Family Health Team in Windsor, Ontario, for her superb stewardship, commitment and, above all, expertise. Thanks also to RNAO IABPG staff for their intense work to see that this BPG moved from concept to reality. A special thanks to the entire BPG Expert Panel and Advisory Committee – we respect and value your expertise and volunteer work. To all, we could not have done this without you!

The nursing community, with its commitment and passion for excellence in nursing care, is providing the knowledge and countless hours essential to the development, implementation, evaluation and revision of each guideline. Employers have responded enthusiastically by nominating best practice champions, implementing and evaluating the guidelines and working towards a culture of evidence-based practice.

Successful uptake of these guidelines requires a concerted effort from nurse clinicians and their health-care colleagues from other disciplines, from nurse educators in academic and practice settings and from employers. After lodging these guidelines into their minds and hearts, knowledgeable and skillful nurses and nursing students need healthy and supportive work environments to help bring these guidelines to practice actions.

We ask that you share this guideline with members of the interdisciplinary team as there is much to learn from one another. Together, we can ensure that the public receives the best possible care every time they come in contact with us. Let's make them the real winners in this important effort!



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How to Use this Document

This nursing best practice guideline^G is a comprehensive document that provides resources necessary for the support of evidence-based nursing practice. The document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client^G. This guideline should be applied as a tool or template that is intended to enhance decision making in the provision of individualized care. In addition, the guideline provides an overview of appropriate structures and supports necessary for the provision of the best possible evidence-based care.

Nurses, other health-care professionals and administrators, who lead and facilitate practice changes, will find this document invaluable for the development of policies, procedures, protocols, educational programs and assessments, interventions and documentation tools. Nurses providing direct client care will benefit from reviewing the recommendations, the evidence^G in support of the recommendations and the process that was used to develop the guideline. However, it is highly recommended that practice settings/environments adapt these guidelines in formats that would be user-friendly for daily use. This guideline has some suggested formats for local adaptation and tailoring.

Organizations adopting the guideline are advised to carry out the following processes:

- a) Assess current nursing and health-care practices using the recommendations in the guideline.
- b) Identify recommendations that will address needs or gaps in services.
- c) Develop a plan to implement the recommendations systematically using associated tools and resources, with particular attention to the RNAO Implementation Toolkit (RNAO, 2012).

We are interested in hearing how you have implemented this guideline. Please contact us to share your story.

* Throughout this document, terms marked with the superscript symbol G (^G) can be found in the Glossary of Terms ([Appendix A](#)).



Purpose and Scope

Best practice guidelines are systematically developed statements designed to assist nurses and clients in making decisions about appropriate health care (Field & Lohr, 1990). This guideline has been developed to address the question of how health-care providers can partner with families to promote safe sleep for infants 0-12 months of age to reduce known risk factors for injury and death. It provides evidence-based recommendations for nurses and the interprofessional team^G who provide care, in all health-care settings, to parents/caregivers and families of infants. This guideline is intended to be applicable to all nursing domains, including clinical, administration, and education.

Working with families to promote safe sleep for infants 0-12 months of age is an interprofessional endeavour. Effective care depends on a coordinated approach that fosters ongoing communication between health-care professionals, parents, families and other caregivers of infants. However, in the delivery of care, the beliefs and unique needs of each client, as well as their personal and environmental resources, must always be considered. The intent of this document is to assist nurses and the interprofessional team to focus on evidence-based strategies. Individual competencies may vary among nurses and across categories of nursing professionals. These competencies are based on knowledge, skills, attitudes and judgment enhanced over time by experience and education. It is expected that individual nurses will perform only those aspects of care for which they have appropriate education and experience. All nurses should seek consultation in instances where the client's care needs surpass the individual nurse's ability to act independently.

The focus of this guideline was narrowed over the course of its development. The initial purpose was to provide recommendations to promote safe sleep among infants aged 0-24 months. However, because most of the evidence identified in the literature search focused on safe sleep for infants aged 0-12 months, the scope of the review was narrowed to focus on this particular age group. Moreover, while the RNAO expert panel had hoped to provide recommendations to prevent both unexpected injury and death during sleep, most of the evidence identified in the literature search focused solely on unexpected death. As a result, we did not undertake a comprehensive literature review regarding the topic of unexpected injuries during sleep. However, where we could, we have included some discussion regarding how the recommendations in this guideline will also help to prevent injuries.

See [Appendix A](#) for a glossary of terms. See [Appendices B](#) and [C](#) for the guideline development process and process for systematic review^G/search of the literature.

Summary of Recommendations

PRACTICE RECOMMENDATIONS ⁶			LEVEL OF EVIDENCE
1.0 Assessment	1.1	At every encounter, assess pregnant women, parents, and other caregivers for factors associated with a higher risk of unexpected death or injury in infants while sleeping.	III
	1.2	At every encounter, assess infants for factors associated with a higher risk for unexpected death while sleeping.	III
	1.3	At every encounter, assess sleep position and the sleeping environment for factors associated with a higher risk for unexpected death in infants.	III
2.0 Planning	2.1	Collaborate with parent/caregiver, family, significant others and the inter-professional team to develop a mutually agreed upon plan to promote safe sleep in all environments.	IV
3.0 Implementation	3.1	Model safe sleep practices by placing infants on their back (supine position) for every sleep, unless medically contraindicated.	III
	3.2	Educate parents/caregivers about safe sleep environments ⁶ .	III
	3.3	Encourage parents/caregivers to place infants to sleep on a firm mattress and in an age appropriate crib, cradle or bassinet that meets current Canadian safety regulations.	IV
	3.4	Educate parents/caregivers about the benefits of sharing the same room with their infants for at least the first six months of life.	III
	3.5	Educate parents/caregivers about the risks of sharing a sleep surface with their infant.	III
	3.6	Support parents/caregivers in making an informed decision regarding pacifier use.	IV
	3.7	Provide health education about the risk of smoking during pregnancy and SIDS.	III

PRACTICE RECOMMENDATIONS ⁶			LEVEL OF EVIDENCE
3.0 Implementation ...con't	3.8	Provide smoking cessation counseling before, during, and after pregnancy to women, family members and other caregivers identified as tobacco users.	III
	3.9	Encourage women, family members and other caregivers to promote a smoke-free environment during and after pregnancy.	III
	3.10	Provide health education about the risks associated with SIDS and alcohol and substance use and their potential effect during pregnancy and while caring for an infant.	III
	3.11	Provide health education before, during, and after pregnancy to promote breastfeeding as a protective factor against SIDS.	III
	3.12	Provide health education before, during, and after pregnancy about routine immunization of infants as a protective factor against SIDS.	III
4.0 Evaluation	4.1	Evaluate parents'/caregivers' knowledge and implementation of safe sleep practices for infants.	IV

EDUCATION RECOMMENDATIONS ⁶			LEVEL OF EVIDENCE
5.0 Nursing Education	5.1	Perform self-reflection on knowledge, judgment, perceptions, practices and beliefs regarding safe sleep environments to reduce barriers to health teaching and modeling of recommendations.	IV
	5.2	Include content about safe sleep practices for infants in all foundational nursing education programs.	IV
	5.3	Provide continuing education and educational resources regarding safe sleep practices for nursing staff of organizations involved in prenatal, postnatal, and community-based family care.	IV

ORGANIZATION AND POLICY RECOMMENDATIONS ⁶			LEVEL OF EVIDENCE
6.0 Organization and Policy Recommendations	6.1	Advocate for education, training and resources for alternate caregivers regarding safe sleep practices for infants.	III
	6.2	Participate in research regarding morbidity and mortality as it relates to infant sleep.	IV
	6.3	Advocate for improved systems for reporting and monitoring of morbidity and mortality related to infant sleep.	IV
	6.4	Develop policies that support the implementation of safe sleep practice recommendations in all organizations involved in prenatal, postnatal, and community-based family care.	IV



Interpretation of Evidence

Levels of Evidence

Ia	Evidence obtained from meta-analysis or systematic reviews of randomized controlled trials ⁶ .
Ib	Evidence obtained from at least one randomized controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomization.
IIb	Evidence obtained from at least one other type of well-designed quasi- experimental study, without randomization.
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

Adapted from “Sign grading system 1999-2012,” by the Scottish Intercollegiate Guidelines Network (SIGN), 2012, in *SIGN 50: A Guideline Developer’s Handbook*. Available from <http://www.sign.ac.uk/guidelines/fulltext/50/index.html>

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Background

Nurses play an integral role in promoting the health of infants across the continuum of care. As such, nurses involved in providing care to families through prenatal, intra-partum, and post-partum periods, and through the first year of the infant's life, need to be supported in how to promote a safe sleep environment to minimize the risks for unintentional injury and death.

The recommendations in this guideline have been developed to assist nurses in working with families to promote safe sleep for infants 0-12 months of age. While the RNAO expert panel had hoped to provide recommendations to prevent both unexpected injury and death during sleep, most of the evidence identified in the literature search focused solely on unexpected death. However, where we could, we have included discussion regarding how the recommendations will also help to prevent injuries.

Sudden Unexpected Deaths in Infancy

Sudden unexpected death in infancy^G refers to the unexpected death of an infant who was thought to be healthy. Unexpected deaths are often thoroughly investigated and sometimes a cause is found (such as a serious infection, a cardiac problem, or a metabolic disorder). In many cases, however, a cause is not determined.

Historically, unexpected deaths were termed 'sudden infant death syndrome' or SIDS^G, and it is a term still commonly used in many jurisdictions. The first definition of SIDS appeared in 1963, and a few revisions of the original definition have been published since then. SIDS is defined as the sudden death of an infant less than one year of age that remains unexplained after a thorough case investigation, including examination of the death scene, completion of an autopsy, and review of the clinical history (Beckwith, 2003). It is generally understood that death occurs during sleep.

SIDS is one of the most important causes of death in the first year of life, accounting for approximately 30% of post-neonatal deaths occurring between one month and one year of age. In Canada, SIDS accounts for the deaths of approximately 35 infants per 100,000 live births each year (Gilbert et al., 2012). The peak incidence of SIDS occurs between two and four months of age (Task Force on Sudden Infant Death Syndrome, 2011b). The risk for SIDS is greatest between one and six months of age with 90% of SIDS cases occurring in infants of this age group (Task Force on Sudden Infant Death Syndrome, 2011b).

Most of the literature reviewed for this document included studies where the term SIDS was used to describe sudden unexpected deaths in which no cause was found after investigation. In recent years, there has been a tendency in Canada, as well as in many other countries, toward using the more general term unexplained death. Unexplained death is used when investigation of an infant's death does not identify a cause and thereby concludes that the cause and manner of death are 'undetermined'. This new terminology derives from evidence associating several modifiable risk factors with SIDS including unsafe sleeping environments. For example, when a deceased infant is found in an unsafe sleeping environment it may be plausible, but inconclusive, that the infant died from asphyxia. Such a case often leads the investigating team and coroner to conclude that they cannot determine the cause of death.

Death by Asphyxia Versus Unexplained Death

Two types of deaths can occur in a sleeping environment perceived as unsafe: death by asphyxia (an unintentional injury) and unexplained death.

Asphyxia is identified as the cause of death when: an infant is discovered with airways obstructed by an object or a person's body, and access to fresh air is not possible; an infant is discovered trapped in a restricted space without access to fresh air; or, an infant is strangled by an object, for example by a blind cord in a crib that is next to a window with a window treatment. These deaths by asphyxia are not classified as sudden unexplained deaths, and avoiding unsafe sleeping environments could have prevented these infant deaths.

A sudden unexpected death in an unsafe sleeping environment is considered “unexplained” when the deceased infant is found with no obvious obstruction of the airways. These deaths are due to either an as yet unidentified cause (totally unexplained deaths) or asphyxia in the sleeping environment but with no way to confirm this. For example, when sharing a sleep surface with an infant, an adult could unintentionally obstruct the infant's airway and later move and awake to realize the infant is deceased, with no cause identified. The challenge with unexplained deaths is that they are, at the autopsy, indistinguishable from those of proven asphyxia. Importantly though, some of these deaths may have been prevented by avoiding unsafe sleeping environments.

Terminology Used in this Guideline

The studies reviewed for the preparation of this guideline dealt most often with the acronym SIDS, and the recommendations subsequently focus on best practices to prevent all sudden unexpected deaths in infants. The acronym SIDS and the term *sudden unexpected deaths* are therefore used interchangeably in this guideline. It should be noted that new acronyms have been proposed, including SUID (sudden unexpected infant deaths; used mostly in the United States) and SUDI or SUD (sudden unexpected deaths in infants; used in European countries). The expert panel chose not to use these acronyms as there is no international consensus on their use. For the purpose of this guideline, it is understood that sudden unexpected deaths include SIDS. It is also understood that SIDS is an unexplained death as, by its definition, a cause of death is not able to be determined following investigation.

Sudden Unexpected Death in Infancy: The death of an infant that is unexpected because the infant was thought to be healthy

Sudden Infant Death Syndrome (SIDS): The sudden death of an infant less than one year of age that remains unexplained after a thorough case investigation (Beckwith, 2003)

Risk Factors for Sudden Unexpected Deaths in Infants

Although a cause is not found in many cases of sudden unexpected death in infants, epidemiological research studies have identified several associated risk factors. For example, some of the earliest studies in this area found that SIDS occurred most frequently during winter months, in infants born prematurely, in males, and in infants of mothers who smoked tobacco during or after pregnancy (Hoffman, Damus, Hillman & Kronkrad, 1988).

Studies conducted in the 1980s and 1990s highlighted a new category of risk factors – those related to infant care practices. In particular, in the late 1980s the prone sleeping position for infants (lying face downwards) was identified as a risk factor for SIDS. Awareness campaigns were launched throughout the world, which were followed by a significant decrease in infant mortality related to unexplained death. For example, between the years 1999 and 2004, rates of sudden unexplained deaths decreased in Canada by as much as 50% (Public Health Agency of Canada, 2008). This decrease followed a national awareness campaign that was launched in 1993 to reduce the risks of SIDS, primarily by avoiding the prone sleeping position. In recent years, studies have focused more on the sleeping environment, including the use of various types of bedding and the practice of sharing the same sleep surface⁶. All of these factors are types of risk considered potentially modifiable and within the scope of this document.

It is important to note that risk factors are not causes. The presence of risk factors may increase the risk of unexpected death in infants, but the factors are not, in themselves, the cause of death.

Study Design for Investigation of Sudden Unexpected Deaths

Although one of the most common causes of post-neonatal death is attributed to sudden unexpected death, it is still a rare occurrence. As such, research to identify risk factors most commonly relies on case-control designs in which various characteristics of infants who died unexpectedly are compared to those of healthy, surviving infants. Randomized controlled trials – generally the most highly regarded research design – are unethical in this context as they would require randomly exposing infants to known risks. Furthermore, prospective cohort studies have been rare, in part because of the major decrease in the occurrence of sudden unexpected death following the widespread awareness campaigns launched in the 1990s. These circumstances mean that the evidence herein is limited to observational studies, but this does not suggest that the existing research is weak.

No case-control studies have examined the modifiable risk factors for sudden unexplained deaths in Canada. However, several retrospective analyses of a large database of all sudden unexpected deaths in Quebec highlighted a marked decrease in SIDS following the 1993 national awareness campaign, which recommended that infants be placed to sleep on their backs or sides (Côté et al., 1999; Côté et al., 2000; Bourbeau et al., 2000). Other Canadian publications have also highlighted a decrease in SIDS following the national awareness campaign as well as risk factors associated with sudden unexpected deaths in infants (mainly non-modifiable) that are similar to those found in the populations of other countries (Millar & Hill, 1993; Rusen et al., 2004; Gilbert et al., 2012).

Recommendations to Decrease the Risk of Sudden Unexpected Deaths

National campaigns to decrease the risk of SIDS in Canada were based on recommendations developed by experts who reviewed the literature available at that time. The first Canadian campaign aimed at decreasing the risk of SIDS, launched in 1993, focused primarily on recommendations to place infants to sleep on their back or side and to avoid overheating. The 1999 “Back to Sleep” campaign addressed additional risk factors. It recommended the back as the only sleeping position, a drug-free pregnancy, the promotion of breastfeeding and the use of a firm mattress and light blankets. The campaign recommended against cigarette smoke in the environment, overheating, and products used to maintain infant sleep position (e.g., sleep positioners).

However, in light of the emerging research in this area and changing trends in infant care practices, a review of these safe sleep recommendations is warranted. Some experts believe that the rate of sudden unexpected deaths can be decreased further if other subsequently identified risk factors (such as sharing a sleep surface or not smoking during pregnancy) were targeted more specifically in campaigns.

At the same time, efforts to decrease the risk of sudden unexpected deaths must take into consideration the decisional conflict that parents and caregivers may face regarding infant care practices. For example, it is commonly recommended that a mother not share the same sleep surface with her infant. However, there is indirect evidence to suggest that, with the increased promotion of breastfeeding over the past two decades, there may be an increase in infants sleeping in the same bed as their mother to facilitate breastfeeding.

Comprehensive strategies for decreasing sudden unexpected deaths involve enhancing protective factors and decreasing various risk factors through education, reinforcement, and enhancing environmental supports such as crib, cradle and bassinet design, and the monitoring and assessment of sleep products⁶.



Guiding Frameworks

The following frameworks were used to guide the literature review and development of recommendations.

Social Determinants of Health

The social determinants of health have been defined as the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness (Commission on Social Determinants of Health, 2008a, 2008b). According to the Commission, avoidable health inequities that exist within and between countries are largely attributable to such circumstances, which are shaped by economics, social policies and politics. Examples of social determinants that affect the health of Canadians include:

- income and social status
- social support networks
- education and literacy
- employment and working conditions
- social environments
- physical environments
- personal health practices and coping skills
- healthy child development
- biology and genetic endowment
- health services
- gender
- race and culture^G

Overall, people with lower socio-economic status (SES) tend to have poorer health. The health of infants and children is particularly susceptible to differences in social determinants, and health disparities may be the result of a range of factors, including biological processes during pregnancy associated with maternal diet, parental experience of stress, and parental risk behaviours (Mikkonen & Raphael, 2010). Health inequities may result in circumstances in which infants are at a greater risk for injury, illness and death, including SIDS. Indeed, an infant's sleep environment may be influenced by parents' or caregivers' limited access to prenatal or preventative health care, lack of awareness regarding safe sleep practices, poor social support systems, or daily living conditions that make safe sleep practices challenging (e.g., lack of infant's own sleep surface or overcrowding).

Interventions to promote safe sleep must therefore be introduced in a context that recognizes the impact of social determinants on an infant's overall health. The Canadian Community Health Nursing Professional Practice Model and Standards of Practice (2011) suggests that such an approach use a comprehensive range of strategies including engaging public health departments, providing linkages to employment and funding programs, and connecting with other community resources (for example, food banks and peer support programs). Collaboration with families can help identify their particular needs and the best way to provide tailored support to meet these needs.

On a broader level, nurses play an important role in advocating for reductions in health inequities. The World Health Organization outlines three overarching recommendations for action, which may inform future directions (Commission on Social Determinants of Health, 2008a, 2008b):

1. Improve daily living conditions – the circumstances in which people are born, grow, live, work, and age (e.g., promote access to affordable housing, fair employment, and primary health care);
2. Address the inequitable distribution of power, money, and resources – the structural drivers of the conditions of daily life – globally, nationally, and locally; and
3. Measure the problem, evaluate action, expand the knowledge base, develop a workforce that is trained in the social determinants of health, and raise public awareness about the social determinants of health.

Informed Decision Making

Every day, parents/caregivers and families make decisions regarding the care and sleep environment of their children. These decisions may be influenced by their beliefs, values, and social circumstances. The right of parents/caregivers and families to make informed decisions regarding the care of their children is respected within the context of the law. It is the responsibility of nurses to facilitate informed decision making by collaborating with families and providing evidence-based information. According to the Canadian Nurses Association (2008), nurses have an ethical responsibility to recognize, respect and promote a person's right to be informed and make decisions.

The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) identifies informed decision making as a key value of perinatal nursing practice. The association (AWHONN, 2009, p. 22) states that perinatal nurses:

- Respect and promote the autonomy of women, helping them to meet their health needs by obtaining appropriate information and services;
- Provide women and families with evidence-based information to facilitate informed decision making;
- Work in partnership with women and their families by respecting their view and supporting their choices whenever possible;
- Advocate for women, newborns, and families within the context of law and institutional processes; and
- Work in collaboration with other health-care providers to support women's and families' care choices whenever possible.

In some cases, parents/caregivers and families may experience decisional conflict. Decisional conflict is defined as a state of uncertainty about a course of action that occurs when two or more reasonable options have benefits and harms that an individual patient may value differently (NANDA International, 2005). In the context of decision making regarding safe sleep practices, decisional conflict may occur when evidence-based information is lacking or conflicts with traditional practices.

The Ottawa Decision Support Framework (O'Connor et al., 1998) provides a framework for helping individuals through situations of decisional conflict. According to the Ottawa Framework, the three major components to the provision of decision support are:

- a) Assessing the patient's level of decisional conflict and related decision-making needs (e.g. knowledge, values clarity, resources and confidence for making and implementing the decision);
- b) Providing support to help minimize the patient's decision-making needs by: providing tailored information on options, benefits and harms; clarifying values associated with outcomes of options; helping patients manage pressure and/or conflicting views of others; enhancing self-help skills in making and implementing decisions; and
- c) Evaluating the quality of the patient's decision and the decision-making process.

Such an approach may help to guide nurses' work with families who experience decisional conflict regarding safe sleep practices.

Anticipatory Guidance

The stages of child development, with their associated physical and cognitive-social characteristics, can present varying hazards and risks for unintentional injuries^G (Flavin, Dostaler, Simpson, Brison & Pickett, 2006). Nurses can contribute to reducing the risk of such injuries by providing timely anticipatory guidance to parents/caregivers.

Anticipatory guidance consists of the information that clinicians give families about what they should expect in their child's development, what they should do to promote this development, and the benefits of healthy lifestyles and practices (Nelson, Wissow & Cheng, 2003). Greater understanding of childhood growth and the types of injuries that children risk suffering can assist parents/caregivers to better appreciate their child's abilities and needs for supervision (Flavin et al., 2006). Anticipatory guidance may contribute to the prevention of unintentional injuries and, in turn, improve functional outcomes of children and their families (Nelson et al., 2003). Guidance can be tailored by developmental level, with various topics specified for parents/caregivers of infants, preschool-age children, school-age children, and adolescents (Gardner, 2007).



Practice Recommendations

1.0 ASSESSMENT

RECOMMENDATION 1.1:

At every encounter, assess pregnant women, parents, and other caregivers for factors associated with a higher risk for unexpected death or injury in infants while sleeping.

Level of Evidence = III

Discussion of Evidence:

Growing research evidence suggests that there are certain factors that, when exhibited by pregnant women, parents and other caregivers, are associated with a higher risk for infants' unexpected death or injury while sleeping.

These risk factors include:

- smoking
- alcohol and substance use
- lack of or late initiation of prenatal care
- obstetrical factors
- parental mental illness
- low socioeconomic status
- beliefs that are incongruent with safe sleep recommendations

Some of these risk factors are modifiable and some may be considered non-modifiable. It is recommended that a comprehensive assessment of risk factors be conducted at the initial encounter with pregnant women and families. Decisions about the specific interventions required to promote safe sleep for infants will be influenced by the identification of particular risk factors. Assessments occurring at subsequent encounters may be tailored as appropriate.

The best practice is to use a validated tool for nursing assessments. However, at the time of this publication, no such tools have been designed specifically for the context of assessing safe sleep. An overview of factors associated with a higher risk of unexpected death in infants while sleeping risk factors is provided in [Appendix D](#).

Smoking

Maternal smoking – either during pregnancy or postnatally – is a significant independent risk factor for SIDS (Arnestad, Anderson, Vege & Rognum, 2001; Blair et al., 2009; Chong, Yip & Karlberg, 2004; Fleming et al., 2003; Jonville-Bera, Autret-Leca, Barveillon & Paris-Llada, 2001; Matthews, McDonnell, McGarvey, Loftus & O'Regan, 2004; Mitchell & Milerad, 1999; Nelson et al., 2005; Paris, Remler & Daling, 2001; Pollack, 2001; Sanderson et al., 2002; Tanaka & Kato, 2001). The risk of smoking has been acknowledged since the 1999 publication of a seminal systematic review of 49 case-control studies that showed a significant association between smoking during pregnancy and SIDS (Mitchell & Milerad, 1999).

Exposure of non-smoking women to environmental tobacco smoke during pregnancy may also have negative consequences, including reducing fetal growth (Ontario Tobacco Research Unit, 2000).

Alcohol and substance use

Alcohol and substance use during pregnancy is a risk factor for SIDS. In a case-control study, Iyasu et al. (2002) found that maternal alcohol use around the time of conception and binge drinking during the first trimester were significant predictors for SIDS even after controlling for other possible risk factors. Intrauterine exposure to opiates has also been associated with an increased risk of SIDS (Kahlert, Rudin & Kind, 2007).

Consumption of alcohol and other substances by parents and caregivers may also pose a risk for SIDS and other unintentional injuries in infants (Blair et al., 2009; Shield, Kehow, Taylor, Patra & Rehm, 2012; Ontario Injury Prevention Resource Centre, 2008). Caregiver alcohol use, even in small amounts, is a risk factor for infant injury (Damashek et al., 2009). In a case-control study, Blair and colleagues (2009) identified maternal alcohol consumption in the 24 hours prior to the SIDS death to be a significant risk factor even when controlling for other important risk factors, such as infant's sleep position, sharing the same sleep surface, maternal smoking during pregnancy, and indicators of low socioeconomic circumstances. An increased risk of SIDS is also associated with cannabis use by either parent (Klonoff-Cohen & Lam-Kruglick, 2001; Scragg et al., 2001). Furthermore, either parent having been admitted to hospital for alcohol or drug-related disorders within five years of the infant's birth is also associated with an increased risk of SIDS (King-Hele et al., 2007; Webb et al., 2010). While the exact mechanism of this risk remains unclear, it is recognized that such substances may impair the judgment and decision-making abilities of the caregiver, leading to increased risk for the infant's safety.

Lack of prenatal care

There is evidence that lack of prenatal care increases the risk of sudden unexpected death in infants (Bubnaitiene, Kalediene & Kevalas, 2005; Getahun, Amre, Rhoads & Demissie, 2004a). Researchers have also found an association between increased risk of SIDS and the late initiation of prenatal care (Paris, Remler, & Daling, 2001).

Obstetrical factors

SIDS has been associated with a number of obstetrical factors, which underscores the need to assist pregnant women to obtain regular prenatal care to facilitate early diagnosis and treatment of health problems. Obstetrical factors include: higher parity (Bubnaitiene et al. 2005; Chong, et al., 2004; Malloy, 2004; Thompson & Mitchell, 2006); multiple pregnancies (Chong, et al., 2004); short intervals between pregnancies (Toro & Sotonyi, 2001); previous infant small for gestational age or pre-term (Smith, Wood, Pell & Dobbie, 2005); placental abnormalities, including placenta previa or abruptio placentae (Getahun et al., 2004a; Getahun, Demissie, Lu & Rhoads, 2004b; Klonoff-Cohen, Srinivasan & Edelstein, 2002); premature rupture of membranes (Getahun et al., 2004a); anemia during pregnancy (Klonoff-Cohen et al., 2002); and pre-eclampsia or eclampsia (Li & Wi, 2000).

Parental mental illness

Maternal depression has been identified as an independent risk factor for SIDS in several studies (Howard, Kirkwood & Latinovic, 2007; Sanderson et al., 2002). Women with postnatal depressive symptoms, in particular, may be less likely to use the preferred supine sleep position, to attend routine health-care visits, to implement safety measures at home, and to complete immunizations (Zajicek-Farber, 2009).

Schizophrenia has also been identified as a risk factor. In one case-control study, children of women with schizophrenia had increased risk of post-neonatal death, largely attributed to SIDS (Bennedsen, Mortensen, Olesen & Henriksen, 2001).

Importantly, the influence of mental illness on the risk for SIDS may not be limited to the mother. A greater risk of SIDS was shown if either parent had been admitted for any psychiatric disorder, with risks increasing further if both parents had been admitted for a psychiatric disorder, even as far as five years before the infant's birth (King-Hele et al., 2007; Webb et al., 2010). This risk was greatest when the admission was for alcohol or drug related disorders.

Low socioeconomic status

A systematic review of 52 case-control and cohort studies demonstrated an independent and significant relationship between lower socioeconomic status and sudden unexpected death in infants, such as SIDS (Spencer & Logan, 2004). In this review, measures for lower socioeconomic status were varied and included such indicators as young maternal age, non-married marital status, low maternal education, and low income. However, regardless of the indicator used, almost all studies reviewed reported an association between sudden unexpected death and low socioeconomic status, even after controlling for other factors, such as smoking during pregnancy. These findings are consistent with other case-control studies (Blair et al., 2009; Bubnaitiene et al., 2005; Getahun et al., 2004a; Luo et al., 2010; Malloy & Eschbach, 2007; Matthews et al., 2004; Mitchell, Steward, Crampton & Salmond, 2000). The findings are also consistent with descriptive studies that investigated the relationship between socioeconomic status and SIDS (Arntzen, Samuelsen, Daltveit & Stoltenberg, 2006; Blakely, Atkinson, Kiro, Blaiklock & D'Souza, 2003; Bruckner & Catalano, 2006; Cai, Hoff, Dew, Guillory & Manning, 2005; Fujita, 2002; Getahun, et al., 2004b; Malloy & Eschbach, 2007).

Health disparities based on differences in socioeconomic status may be partly due to differences in infant care practices. For example, low socioeconomic status has been associated with greater use of the non-supine sleeping position (Cai et al., 2005; Chung et al., 2003; Colson et al., 2006; Geib et al., 2006; McKinney et al., 2008). From the social determinants of health perspective, adherence to safe sleep practices may be challenging because of limited access to prenatal or preventative health care, lack of awareness of safe sleep recommendations, poor social support systems or poor daily living conditions.

Beliefs incongruent with safe sleep recommendations

Parental/caregiver and family beliefs that are incongruent with safe sleep recommendations may contribute to unsafe sleep practices. Despite being informed of the correct sleep position by health-care providers, parents or other caregivers may continue to follow the advice of their family members and place infants in unsafe sleep positions (Oden, Joyner, Ajao & Moon, 2010). Even if they have trust in the medical team, caregivers may – if they feel it is in the best interest of their infant – make decisions counter to the team's advice (Oden et al., 2010).

Differences in beliefs related to safe sleep recommendations may vary based on race and culture. While racial and cultural disparities in SIDS risk have been identified (Getahun et al., 2004a; Getahun et al., 2004b; Paris et al., 2001; Pollack & Frohna, 2001; Schulpen, van Steenberghe & van Driel, 2001), such differences are most likely explained by differences in infant care practices (Hauck et al., 2002). In the United States, the SIDS rate for infants of Native American or Black ethnicity is double that of Caucasian infants (Task Force on Sudden Infant Death Syndrome, 2011a). However, a number of American studies suggest that Black families are more likely than Hispanic or White families to use a non-supine sleep position (McKinney, Holt, Cunningham, Leroux & Starr, 2008; Vernacchio et al., 2003) and to share the same sleep surface (Fu, Colson, Corwin & Moon, 2008; Hauck et al., 2008). An increased risk of SIDS has also been identified among Canada's Aboriginal population as compared to the national average (Luo et al., 2004; Luo et al., 2010). There are safe sleep guidelines that address safe sleep practices from a cultural perspective (for example, see Tripartite MCH Committee, 2012).

RECOMMENDATION 1.2:

At every encounter, assess infants for factors associated with a higher risk for unexpected death while sleeping.

Level of Evidence = III

Discussion of Evidence:

Evidence from observational studies suggests that certain characteristics are associated with a higher risk for infants' unexpected death while sleeping.

These characteristics include:

- male sex of the infant
- twins
- infant age, development, or size
- illness or congenital conditions

These characteristics are non-modifiable, but the presence of any of them can influence the plan of care for promoting safe sleep. The presence of non-modifiable risk factors may highlight the importance of efforts to address modifiable risks – for example, by promoting breastfeeding. It is recommended that a comprehensive assessment of risk factors be conducted at the initial encounter with families. Assessments made at subsequent or repeated encounters may be tailored as appropriate. While the best practice is to use a validated tool for assessments, no such tool specific to the context of safe sleep is currently available. An overview of factors associated with a higher risk of unexpected death in infants while sleeping is provided in [Appendix D](#).

Male sex of the infant

Males are at increased risk of SIDS and unintentional injury (Byard, Elliott & Vink, 2012; Fujita, 2002; Getahun, et al., 2004a; Getahun et al., 2004b; Sorenson, 2011; Gilbride, Wild, Wilson, Svenson & Spady, 2006; Vitale, Goss, Matsumoto & Roye, 2006).

Twins

Infants born of twin pregnancies may be at greater risk of SIDS than singleton infants (Getahun, et al., 2004b; Pharoah & Platt, 2007; Platt & Pharoah, 2003).

Infant age, development or size

Age and development may impact an infant's risk of unexpected death or unintentional injury while sleeping. SIDS appears to have a unique age distribution as the peak incidence occurs between two and four months of age (Task Force on Sudden Infant Death Syndrome, 2011b). Infants are relatively spared in the first month, and 90% of SIDS occurs before six months of age (Task Force on Sudden Infant Death Syndrome, 2011b). As the infant reaches developmental milestones, such as the ability to roll over, new risks for injury may be introduced (for example, rolling off of a sleep surface).

Factors related to infant development or size have also been associated with increased risk for sudden unexplained deaths. In both case-control and descriptive studies, SIDS has been associated with low birth weight or small for gestational age (Blair, Platt, Smith & Fleming, 2006; Fujita, 2002; Getahun, et al., 2004a; Getahun, et al., 2004b; Jonville-Bera, Autret-Leca, Barbeillon & Paris-Llado, 2001; Malloy, 2007; Matthews et al., 2004; McGarvey, McDonnell, Chong, O'Regan & Matthews, 2003; Paris et al., 2001; Pollack & Frohna, 2001; Thompson, Thach, Becroft & Mitchell, 2006), prematurity (Blair et al., 2009; Halloran & Alexander, 2006; Smith, Pell & Dobbie, 2003; Thompson & Mitchell, 2006), and poor infant growth rate (Blair et al., 2000).

Illness or congenital conditions

There are limited research findings related to the possible influence of infant illness on sudden unexplained death. In one study, infants who died of SIDS were more likely than healthy infants to have had developmental problems, to have had special medical investigations (for example, radiographic examination or electrocardiogram), or to have been admitted to the hospital after the first week of life (Vennemann et al., 2005). However, symptoms of infection or illness, such as the presence of fever (>38 degrees Celsius), diarrhea, vomiting, runny nose or cough, did not differ between the two groups and were not identified as risk factors for SIDS (Vennemann et al., 2005). We do not have evidence to support which specific health problems place sleeping infants at greater risk for death. However, it is prudent that infants with known health problems be assessed, closely monitored, and treated appropriately by health-care professionals.

RECOMMENDATION 1.3:

At every encounter, assess sleep position and the sleeping environment for factors associated with a higher risk for unexpected death in infants.

Level of Evidence = III

Discussion of Evidence:

The literature suggests that four key factors related to the sleep environment of infants are associated with a higher risk for unexpected death while sleeping.

These four factors are:

- non-supine sleep position
- sleep surfaces not recommended for infant sleep
- shared sleep surface
- extra items in the sleep environment

A comprehensive assessment of these four risk factors should be conducted at the initial encounter with families. The identification of these factors through the process of a nursing assessment can help tailor the approach to promoting safe sleep for infants and determine the need for specific interventions (for example, health teaching). Assessments that are made at subsequent or repeated encounters may be tailored as appropriate. While the best practice is to use

a validated tool for assessments, no such tool specific to the context of safe sleep is available. An overview of factors associated with a higher risk of unexpected death in infants while sleeping [Appendix D](#).

Non-supine sleep position

A systematic review of studies on infant sleep position and SIDS found that 36 case-control studies published between 1965 and 1999 showed a positive association between prone sleeping and SIDS (Gilbert, Salanti, Harden & See, 2005). This finding has been supported by more recent cohort and case-control studies (Arnestad et al., 2001; Carpenter et al., 2004; Hauck et al., 2002; Hauck et al., 2003; Jonville-Bera et al., 2001; Li et al., 2003; Nelson et al., 2005; Tanaka & Kato, 2001; Trachtenberg, Haas, Kinney, Stanley & Krous, 2012; Vennemann et al., 2009a; Yoo, Kim, Kang, Lee, Seo, et al., 2013). In a case-control study of primarily high-risk, urban African American families, there was a more than twofold increased risk of SIDS associated with infants being placed prone for last sleep compared with the non-prone positions, even after adjusting for potential confounding variables and other sleep environment factors, such as a soft sleep surface, pillow use, having the head covered with bedding, and bed sharing (Hauck et al., 2002).

Being accustomed to a sleeping position may also affect risk. In two case-control studies, infants placed in an unaccustomed prone or side-sleeping position had a higher risk of SIDS than infants who were always placed prone or on their side (Li et al., 2003; Vennemann et al., 2009a).

Sleep surfaces that are not recommended for infant sleep

Adult's bed. A case-comparison study by Scheers, Rutherford and Kemp (2003) reported that the risk of suffocation was approximately 40 times higher for infants in adult beds as compared with those in cribs. Furthermore, many of the infants and toddlers who died while sleeping were found sleeping alone in an adult bed. The causes of death were often attributed to infants having moved during sleep and becoming trapped within the structure of the bed or between the bed and the wall or another piece of furniture. The issue of sharing an adult bed for infant sleep will be discussed as part of Recommendation 3.5.

Sofas, couches, armchairs. Very few studies have evaluated the risk of infant death as a result of sleeping on a sofa independent of sharing that sleep surface with an adult. Most of the case-control studies grouped the data of infants found alone on a sofa with those who shared that sleep surface (Blair et al. 2009; Carpenter et al. 2004; McGarvey, McDonnell, Hamilton & O'Regan, 2006). In a case series design study, Byard et al. (2001) looked at deaths on sofas. In that series, there were six deaths due to accidental asphyxia, of which four involved shared sleeping with an adult. Experts agree that infants should not sleep on sofas, couches or armchairs because of the risk of suffocation or entrapment.

Baby seats, swings, bouncers, strollers, slings and car seats. These products are not designed for infant sleep and research examining their use as sleep surfaces is limited. A retrospective review of sudden unexpected deaths in the province of Quebec between 1991 and 2000 identified a small proportion of infants who died suddenly and unexpectedly of unknown causes, including SIDS, in sitting positions (Côté, Bairam, Deschenes & Hatzakis, 2008). Côté and colleagues (2008) found more infants less than one month of age had died in the sitting position as compared to infants who died while lying down. Predisposing factors included length of time in the sitting position and presence of an increased risk of airway obstruction.

While deaths in car seats or similar devices are not common, several studies identified a potential risk of decreased oxygen level in the blood if an infant's head falls forward resulting in airway obstruction (Tonkin, McIntosh, Hadden, Dakin, Rowley et al. 2003; Tonkin, McIntosh, Nixon, Rowley & Gunn, 2008). This is of particular concern for infants under one month of age

and prematurely born infants. A large controlled study confirmed that hypoxic events occur in term newborn infants while in car seats or car beds (Cerar, Scirica, Gantar, Osredkar, Neubauer et al., 2009). Cerar and colleagues (2009) recommended that infant car seats only be used for travel and never as a substitute for a crib. It is important to note that there have been no case-control studies evaluating the risk of swings, bouncers, strollers and slings. Nevertheless, if the infant is in the sitting position in these devices, the same risks may apply as with car seats. Canada's Joint Statement on Safe Sleep: Preventing Sudden Infant Deaths in Canada (Public Health Agency of Canada, 2011) states that, "Strollers, swings, bouncers, and car seats are not intended for infant sleep. When sleeping in the sitting position, an infant's head can fall forward and their airway can be constricted. This risk reinforces the importance to move an infant to a crib, cradle, or bassinet to sleep, or when the destination is reached" (p. 2).

Playpens, play-yards. In Canada, playpens and play-yards are not designed or tested for infant sleep within the Canadian Consumer Product Safety Act (CCPSA) and should be used according to the manufacturers' instructions. There have been reports of deaths in these devices. Jackson and Moon (2008) conducted a five-year retrospective review and analysis of deaths reported to the US Consumer and Product Safety Commission (CPSC) that occurred in playpens and portable cribs. Thirteen of the 21 deaths reported were attributed to unintentional injury related to asphyxia, strangulation and positional asphyxia. These deaths were the consequence of risks unique to playpens and portable cribs: playpen collapse, modifications to the playpen, and improper assembly. The authors concluded there are risks associated with using portable cribs and playpens as sleep surfaces for infants.

Currently, the American Academy of Pediatrics acknowledges that, for certain families, a crib might not be possible for financial reasons or space considerations, and it therefore recommends the use of a portable crib/play-yard or bassinet, provided it meets the CPSC guidelines (Task Force for Sudden Infant Death Syndrome, 2011a). In Canada, as noted above, playpens and play-yards are not currently tested or designed for infant sleep and should be used according to the manufacturer's instructions. If these products are to be used as sleep surfaces for infants it is important that the guidelines for a safe sleep environment be followed.

Shared sleep surface. "Sharing the same sleep surface" refers to any circumstance in which adults and infants share a common surface while sleeping. This most often occurs when adults and infants sleep in the same bed, but also includes any surface used for sleep, such as sofas. The term does not refer to a situation in which adults and infants use separate sleep surfaces within the same room, for example an adult bed and crib in the same room.

Sharing the same sleep surface poses an increased risk for SIDS. A recent meta-analysis found that the risk for SIDS was almost three times greater for bed-sharing compared to non-bed-sharing infants (Vennemann et al., 2012). Even when the bed-sharing parent does not smoke, consume alcohol or use illicit substances, breastfed infants under three months of age have a five-fold increase in SIDS risk when bed sharing compared to not bed sharing (Carpenter, McGarvey, Mitchell, Tappin, Vennemann et al., 2013).

The risk of SIDS attributable to bed sharing is further increased in the presence of other risk factors. In particular, the risk increases significantly if an infant shares a sleep surface with a parent who smokes (Carpenter et al., 2013; Horsley et al., 2007; Vennemann et al., 2012). More specifically, the risk for SIDS was found to be six times greater for infants who share a sleep surface with a mother who smokes (Vennemann et al., 2012). Other factors that further increase the risk of SIDS attributable to sharing the same sleep surface include: an infant being less than 12 weeks of age (Horsley et al., 2007; Vennemann et al., 2012); low birth weight of the infant or low gestational age at birth (McGarvey et al., 2006); alcohol or drug use of the parent sharing the bed (Blair et al., 2009; Carpenter et al., 2013); a soft sleep surface (Fu, Moon & Hauck, 2010); and multiple people sharing the same sleep surface with the infant (Hauck et al., 2003).

Extra items in the sleep environment

A safe sleep environment is free of extra items in the crib, cradle or bassinet, other than the mattress and fitted sheet. The following extra items in the sleep environment should be noted in the assessment.

Blankets, duvets, and sleep sacks. The use of a duvet has been investigated as a possible risk factor for SIDS, with contradictory results. Mitchell, Williams and Taylor (1999) and McGarvey and colleagues (2003) showed no association between the use of a duvet and SIDS after adjusting for possible confounders. In other studies, duvet use was associated with SIDS, even after adjusting for other risk factors (Blair et al., 1999; Vennemann et al., 2009a; Schlaud, Dreier, Debertin, Jachau, Heide et al., 2010). In general, the RNAO expert panel does not recommend blankets and duvets in the sleeping area.

One of the major concerns regarding the use of blankets or duvets is having the infants' head covered by the bedding, which is potentially harmful. Studies in healthy infants have shown that a mild increase in body temperature and in the level of inspired carbon dioxide result when their heads are covered by a thin blanket or a quilt (Malcolm, Cohen & Henderson-Smart, 1994; Skadberg & Markestad, 1997). Having the head covered has been associated with SIDS (Blair, Mitchell, Heckstall-Smith & Fleming, 2008; Blair et al., 2009).

To avoid head covering, the RNAO expert panel recommends that there be no loose bedding in the crib or sleeping area. Sleep sacks or wearable blankets are designed as sleep clothing that keep the infant warm, but do not contribute to the risk of entrapment or head covering when used properly. Two studies have evaluated sleep sacks as alternatives to blankets. In the Netherlands, where sleep sacks are traditionally used, their use was associated with a lower risk of SIDS (L'Hoir et al., 1998). However, in a UK-based study, Blair and colleagues (2009) showed no protective effect of these sleeping sacks.

Health Canada does not test infant sleepwear for safe use, except to ensure that it meets the standards set out for flammability requirements. Parents and caregivers often use swaddling – the practice of wrapping an infant in a blanket – to promote sleep. However, if the blanket becomes unwrapped, this may introduce a loose blanket into the sleep environment. Swaddling may also lead to overheating, depending on the type of blanket used. Case-control studies have reported that swaddling has no effect on an infant's risk of SIDS (Hauck et al., 2003), or it may increase that risk (Blair et al., 2009). The risk may be particularly significant when the swaddled infant is placed in the prone position for sleep (Ponsonby, Dwyer, Gibbons, Cochrane & Wang, 1993; Wilson, Taylor, Laing, Williams, & Mitchell, 1994).

Pillows and pillow-like items (cushions and stuffed toys). Several case-control studies suggest an increased risk of SIDS with the use of a pillow in the crib (Blair et al. 2009; Hauck et al. 2003; Schlaud et al., 2010). Additional studies did not support this finding when other factors, such as maternal smoking and low socioeconomic status, were accounted for (McGarvey et al. 2003; Vennemann et al. 2005; Vennemann et al. 2009a).

The concern with the use of pillows and pillow-like items is the potential risk of injury by suffocation if the infant's face becomes covered and breathing is obstructed. The risk of SIDS in relation to pillow use appears to be most significant when an infant is placed in the prone sleeping position (Thompson, Thach, Becroft & Mitchell, 2006). For these reasons, the RNAO expert panel recommends against the use of pillows and pillow-like items in the infant's sleep environment.

Positioning devices or wedges. These products are designed to maintain the infant's sleeping position on the back. Some manufacturers claim that these products reduce SIDS by preventing the infant from turning to the prone position. However, no studies have evaluated the effectiveness of these devices. The Joint Statement on Safe Sleep recommends against the use of positioning devices (Public Health Agency of Canada, 2011). The American Academy of Pediatrics also includes a recommendation against positioning devices, concluding that there is insufficient evidence to support the claim that these devices may reduce the risk of SIDS. They further conclude that the potential for injury and death due to the risk

of suffocation is too great to warrant the use of positioning devices (Task Force for Sudden Infant Death Syndrome, 2011a).

Bumper pads. Bumper pads were originally designed to prevent an infant's head from getting trapped between the slats of the crib. However, current Canadian standards, which specify a maximum distance of 6 centimetres (2 3/8 inches) between slats, have reduced the need for bumper pads.

The main concern associated with the use of bumper pads is the risk of suffocation, entrapment, and strangulation (Thach, Rutherford & Harris, 2007). Bumper pads are often made from soft, pillow-like material and can therefore pose a risk to the infant should their face be pushed up against the bumper pad. In the early stages of motor development in particular, young infants may have difficulty extricating themselves from this potentially harmful environment. Between the years 1987 and 2001, 23 incidents involving bumper pads were reported to Health Canada, including one strangulation death, one suffocation death, and three near-suffocation occurrences (Health Canada, 2005).

Once the infant is able to pull up into a standing position, bumper pads may pose an additional risk for fall or entrapment as they may be used as a step to climb out of bed (Health Canada, 2012). Most Canadian health authorities now strongly advise against the use of bumper pads (see Health Canada, 2005; Canadian Pediatric Society, 2004; Canadian Foundation for the Study of Infant Deaths, www.sidscanada.org).

2.0 PLANNING

RECOMMENDATION 2.1:

Collaborate with parent/caregiver, family, significant others and the inter-professional team to develop a mutually agreed upon plan to promote safe sleep in all environments.

Level of Evidence = IV

Discussion of Evidence:

Proper goal setting enables the team to closely monitor the effectiveness of interventions, continuing those that are successful and discontinuing those that are not.

The plan of care should be based on client-centered care approaches^G and be developed by the parent/caregiver, family and interprofessional team (RNAO, 2006). To establish mutual goals and adherence to the safe sleep plan, it is essential to include the parent/caregiver, family, and any additional significant others in the plan development. The parent/caregiver and/or family's concerns should be considered, to ensure that the safe sleep plan is mutually acceptable.

Risk factors identified in the assessment phase provide the basis for developing a plan to promote safe sleep. After modifiable and non-modifiable risk factors for unexpected death and injury during sleep are identified, the nurse can determine the relevant areas for health teaching as well as opportunities for targeted interventions to reduce modifiable risk.

3.0 IMPLEMENTATION

RECOMMENDATION 3.1:

Model safe sleep practices by placing infants on their back (supine position) for every sleep, unless medically contraindicated.

Level of Evidence = III

Discussion of Evidence:

The prone sleeping position for infants was identified as a risk factor for SIDS in the 1980s. Although it remains unclear how the prone sleeping position causes this increased risk, international campaigns to encourage parents and caregivers to place infants in a supine position have led to a marked reduction in SIDS mortality. Between the years 1999 and 2004, rates of sudden unexplained deaths in Canada decreased by as much as 50% (Public Health Agency of Canada, 2008). This decrease followed a national awareness campaign that was launched in 1993 to reduce the risks of SIDS, primarily by avoiding the prone sleeping position.

A major factor associated with decisions made by parents and caregivers regarding infant safe sleep practices, particularly related to sleep position, is the information communicated by health-care providers (Ball, 2006; Colson, Bergman, Shapiro & Leventhal, 2001; Colson et al., 2006; Colson et al., 2009; Hauck, Signore, Fein & Raju, 2008; Lahr, Rosenberg, & Lapidus, 2005; Moon & Omron, 2002; Smith et al., 2010; Vernacchio et al., 2003; Von Kohorn et al., 2010; Willinger, Ko, Hoffman, Kessler & Corwin, 2000; Zachry & Kitzman, 2010). Modeling and reinforcement of safe sleep practices by nursing staff after the delivery helps parents/caregivers to gain confidence in adopting these practices when the mother and infant are discharged home (Colson et al., 2001; Esposito et al. 2007). The exact protocol is established on an individual basis following consultation with the inter-professional care team and according to the infant's needs and the institutional policies and protocols.

The behaviours communicated and modeled in the hospital setting have been shown to influence parents'/caregivers' choice of sleep position for their infant. Parents and other caregivers who receive teaching from a health-care provider to use the supine position, or who see their infant sleep in the supine position in the hospital nursery, are more likely to report that they used the supine position at home (Colson et al., 2001; Colson et al., 2006; Moon & Omron, 2002; Zachry & Kitzman, 2010). This role modeling is particularly relevant for parents whose infants are medically required to sleep in a prone position (for example, in the neonatal intensive care unit) but will need to transition to a supine position upon discharge (Vernacchio et al., 2003). Evidence that written information alone does not seem to affect the choice of sleep position underscores the importance of the nurse actively engaging in communication and modeling (Moon & Omron, 2002), particularly for low income caregivers (Zachry & Kitzman, 2010).

The prone sleep position for infants is a modifiable risk factor that may be reduced by placing the infant in the supine position for every sleep. While it is recognized that infants may fall asleep in various positions at various times, it is recommended that the supine position be used every time an infant is placed to sleep.

SPECIAL CONSIDERATIONS

Skin-to-skin contact

While definitions of skin-to-skin contact may vary based on the timing of initiation and duration, this practice generally involves placing the naked infant (with or without a diaper and a cap) on the mother's bare chest in the prone position (Moore, Anderson, Bergman & Dowswell, 2012). Early skin-to-skin contact, occurring within the first 24 hours of the infant's birth, has been shown to benefit breastfeeding outcomes, enhance cardio-respiratory stability, and reduce infant crying in the hospital setting (Moore et al., 2012). However, further research regarding the safety of skin-to-skin contact beyond this initial period is necessary, as skin-to-skin contact may introduce risks to safe sleep, particularly if the infant or mother falls asleep in this position. For example, this would result in an infant falling asleep in a non-supine sleep position, and the risks of this are unclear in this context. If the caregiver falls asleep, there are also potential risks for unintentional injuries to the infant, including falls or airway compromise. In the first days of life, there is also emerging concern regarding sudden unexpected postnatal collapse (SUPC), the rare event of apparently healthy infants experiencing a sudden death, often during skin-to-skin contact in the prone position (Herlenius & Kuhn, 2013). It is recommended that nurses counsel parents on the potential risks of skin-to-skin contact, the need for increased vigilance in maintaining the infant's airway, and how to monitor for signs of infant well-being.

Positional plagiocephaly

Concurrent with the increased use of the supine position for sleep, an increase in a form of cranial asymmetry, known as positional or deformational plagiocephaly, has also been observed (Cummings, 2011). This condition is most often noted around two to three months of age, and is described as a flattened or misshapen head that may result from an infant being placed in the same position (such as on the back) for long periods of time (National Institute of Health/ Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2013). Although this is a benign finding in a healthy baby, it is important for the infant to be seen by a primary care provider to rule out other conditions such as craniosynostosis or torticollis. If the diagnosis is unclear, further testing may be recommended (Cummings, 2011).

A number of strategies are commonly suggested to minimize the development and progression of positional plagiocephaly, particularly before the age of six months (Canadian Pediatric Society, 2011; Cummings, 2011). These include short but frequent opportunities for supervised "tummy time" while the infant is awake and limited time in devices that inhibit free movement, such as car seats, carriers, and swings. For additional information on preventing and decreasing the progression of positional plagiocephaly, please see [Appendix E](#).

Parents/caregivers are encouraged to continue to place their baby on his/her back for all sleeps and try to alternate the baby's head position when he/she is in the supine position. Parents and caregivers should also be counseled as to the benefits of tummy time to facilitate normal growth and development.

Rolling

There is limited evidence regarding safe sleep practices when an infant has begun to roll. The concern expressed by both parents/caregivers and professionals occurs when an infant can roll supine to prone but cannot roll back to supine. Although some infants begin to roll as early as two months of age, most infants begin to roll at three or four months of age and are able to roll in both directions by five or six months of age. Since most infants begin to roll after the peak incidence for SIDS has passed, the RNAO expert panel recommends that parents/caregivers continue to place

their infant in a supine position for every sleep, but when an infant has begun to roll, they do not need to reposition the baby. To facilitate mastery of rolling in both directions, parents and caregivers should be instructed to increase their infant's opportunities for "tummy time", which provides opportunities to strengthen the truncal musculature.

Addressing parent/caregiver concerns

Despite being aware that supine sleep position is recommended, parents/caregivers may continue to place infants in a non-supine position. Reasons cited for choosing a non-supine sleep position include beliefs that infants are more comfortable when lying on their stomach and concerns about the risk that they will spit up and choke in the supine position (Chung-Park, 2012; Colson, Stille, Payton, Bernstein & Dworkin, 2000; Colson et al, 2006; Oden et al, 2010; Von Korhorn, et al, 2010). Such concerns may need to be addressed by health-care providers when modeling and encouraging the use of a supine sleep position.

RECOMMENDATION 3.2:

Educate parents/caregivers about safe sleep environments.

Level of Evidence = III

Discussion of Evidence:

An infant is in a safe sleep environment when placed in a crib, cradle, or bassinet that meets Canadian safety regulations and that is kept free of any extra items other than the mattress and a fitted sheet. This recommendation is consistent with that of international health authorities and the Joint Statement on Safe Sleep (Public Health Agency of Canada, 2011).

The American Academy of Pediatrics recommends avoiding overheating and head covering (Task Force on Sudden Infant Death Syndrome, 2011a, 2011b). Concerning the use of a blanket, quilt and comforter, it states that, "these items should not be placed loose near the infant, between the mattress and the sheet, or under the infant. Infant sleep clothing that is designed to keep the infant warm without the possible hazard of head covering or entrapment can be used in place of blankets" (American Academy of Pediatrics, 2011b, p. e1352). In addition, blankets used to swaddle infants can become loose, posing a risk for child safety and possible increased risk for SIDS. There is currently no evidence on the "safe way" to swaddle an infant, and hence caution regarding swaddling should be expressed with parents/caregivers.

According to the Canadian Joint Statement on Safe Sleep, "Infants are safest when placed to sleep in fitted one-piece sleepwear that is comfortable at room temperature and does not cause them to overheat" (Public Health Agency of Canada, 2011, p. 2). Citing the work by Mitchell and colleagues (2008), the statement also purports that, "infants do not require additional blankets as infants' movements may cause their heads to become completely covered and cause them to overheat" (Public Health Agency of Canada, 2011, p. 2).

Parents and caregivers may be concerned that the infant will be too cold without the use of a blanket. Prematurely born infants and term infants in the first month of life may be kept sufficiently warm with some insulation from clothing. Beyond this first month of life, older infants are more likely at risk of being too hot. A summary on the control of temperature in infants is provided in [Appendix F](#).

The case-control studies undertaken to determine whether the prone sleeping position was associated with SIDS highlighted an interaction between prone sleeping, overheating (often related to too much bedding) and SIDS (Fleming et al., 1990; Ponsonby et al., 1993; Williams, Taylor & Mitchell, 1996). As a consequence, national campaigns that started in the late 1980s and early 1990s all recommended avoiding overheating by limiting the number of blankets and maintaining the room temperature in a range to avoid overheating. Case-control studies undertaken after the decline in SIDS rates in the mid-1990s (following the significant decrease in use of the prone sleeping position) failed to identify high ambient temperature as a risk factor for SIDS (L'Hoir et al. 1998; Vennemann et al. 2009a).

Parents and caregivers should be aware that although many SIDS-related international associations and foundations advertise specific brand names of sleep sacks on their websites and in their promotional materials, a one-piece sleepwear of any brand that makes their child comfortable at room temperature is appropriate. If sleep sacks are used, parents/caregivers are encouraged to use these products according to manufacturer recommendations and to choose the correct size for their infant to avoid the risk of the infant slipping into the sack and getting his/her head covered.

RECOMMENDATION 3.3:

Encourage parents/caregivers to place infants to sleep on a firm mattress and in an age-appropriate crib, cradle or bassinet that meets current Canadian safety regulations.

Level of Evidence = IV

Discussion of Evidence:

Cribs, cradles and bassinets are designed for infant sleep and are regulated in accordance with the Canadian Consumer Product Safety Act as enforced by Health Canada's Consumer Product Safety Directorate. The directorate is responsible for testing, monitoring and recalling legislated products and assists with maintaining the safety standards of these products. Only those products that meet Canada's safety regulations have been tested for unsupervised infant sleep. Parents and caregivers of infants should assess if their crib, cradle or bassinet meets these regulations by examining the product label for manufacturer name, model number, and date of manufacture. Health Canada recommends periodic examination and maintenance of the crib, cradle or bassinet to ensure proper use and to prevent injuries.

In order to select a suitable sleep surface over the course of the infant's growth and development, parents and caregivers need to be aware of the child's weight, the weight requirements of the product set by the manufacturer, and developmental abilities of the child (Health Canada, 2012). Nurses can provide anticipatory guidance to families regarding what they should expect in their child's development to facilitate timely and appropriate transitions between sleep surfaces.

PRACTICE TIP: Developmental considerations for transitioning between sleep surfaces**Bassinet to cradle/crib**

A bassinet may be used until an infant can roll over or it reaches the weight limit as outlined by the manufacturer, whichever comes first.

Cradle to crib

A cradle may be used until an infant has achieved the developmental task of pushing up on its hands and knees when awake or when it reaches the weight limit outlined by the manufacturer, whichever comes first.

Crib to bed

A crib may be used until a child is taller than 90 cm (35 inches) or until a child attempts to climb out of the crib, whichever comes first. Children who are over 90 cm (35 inches) or who have tried to climb out of their crib should be transitioned to a toddler bed or other bed to prevent them from falling over the crib bars and out of the crib. On average, children are about two years of age when they reach 90 cm (35 inches).

In summary, parents and caregivers must be advised and reminded to use their infant equipment for its intended purpose. Manufacturers' instructions for assembling and using sleep surfaces, such as cribs, should be followed. Clear messages should be given that, for example, car seats are for car travel, not regular sleeping, and swings and bouncers are intended for infant entertainment and not sleeping.

References (Health Canada, 2012; www.healthycanadians.gc.ca)

Mattress

The issue of the firmness of the mattress or sleep surface was first brought to attention following a publication by Kemp and Thach (1991). These authors reported deaths of babies that had been placed to sleep on soft bedding (cushions filled with polystyrene beads). Three subsequent case-control studies showed an association between sleeping on a soft surface and an increased risk for SIDS (Hauck et al. 2003; Jonville-Bera et al., 2001; Mitchell, Scragg & Clements, 1996).

It is recommended that the mattress for a crib, cradle or bassinet be firm and flat and fit snugly within the sleep product. A crib mattress should be no thicker than 15 centimetres (6 inches) and there should be no more than a 3 centimetre (1 ³/₁₆ inch) gap on any side when the mattress is pushed to one side of the crib (Health Canada, 2012). Larger gaps may pose a significant risk for infants who may get wedged between the crib bars and mattress.

Special considerations

Parents and caregivers may choose to use other traditional or cultural items for sleep surfaces. For example, cradle boards are firm surfaces that are an integral part of Indigenous peoples' culture. Historically, these boards are designed to facilitate bonding between the mother and infant and are believed to strengthen neck muscles and allow infants to visually explore their environment. Spiritually, they are smudged with prayers of songs and good thoughts. They are often worn on a parent's back and the infant may be awake or asleep. Although cradle boards are widely used, there is a lack of published evidence regarding their use for sleep (Tripartite MCH Committee, 2012).

RECOMMENDATION 3.4:

Educate parents/caregivers about the benefits of sharing the same room with their infants for at least the first six months of life.

Level of Evidence = III

Discussion of Evidence:

Sharing the same room with infants – without sleeping on the same surface – can decrease the risk of SIDS (Blair et al., 2009; Carpenter et al., 2004; Tappin, Ecob & Brooke, 2005). The Joint Statement on Safe Sleep recommends that infants should sleep in their own crib in their parents' or caregivers' room for the first six months of life (Public Health Agency of Canada, 2011). Other guidelines also recommend room-sharing^G without bed sharing for at least the first six months of life (Perinatal Services BC, 2001; Queensland Health, 2008). Such a sleeping arrangement may help to facilitate breastfeeding and close monitoring of the infant during sleep.

PRACTICE TIP: Home monitors

Many parents and caregivers use home monitors to reassure themselves that their baby is fine while they are not attending to them. Home monitors include movement detectors and sound detectors as well as more sophisticated equipment with a video camera. However, a recent systematic review found no evidence that home monitoring may be of use for preventing SIDS among healthy infants (Strehle et al., 2012). It is unclear whether the use of home monitors is more effective than routine checking of the child for the prevention of other unintended injuries during sleep.

Some infants may require home cardiorespiratory or oximeter monitoring as prescribed by physicians for the management of special medical conditions. These monitors should be used as prescribed.

RECOMMENDATION 3.5:

Educate parents/caregivers about the risks of sharing a sleep surface with their infant.

Level of Evidence = III

Discussion of Evidence:

Infants that share the same sleep surface with another person or animal are at increased risk for SIDS and unintentional injury. Sharing the same sleep surface poses a significant increase in an infant's risk for unexpected death, which is further increased in the presence of other risk factors (Carpenter et al., 2013; Fu et al, 2010; Hauck et al., 2003; Horsley et al., 2007; McGarvey et al., 2006; Vennemann et al., 2012). These additional risk factors include:

- maternal smoking
- bed sharing with infants less than 12 weeks of age
- low infant birth weight/low gestational age at birth
- alcohol or drug use by surface sharer
- soft sleep surface
- multiple people sharing same sleep surface

Infants sharing a sleep surface are also at increased risk for unintentional injuries such as falls and asphyxiation. Particularly when infants are able to roll or crawl, they may fall off a high surface, such as an adult bed (Health Canada, 2012). Infants can also become entrapped between a wall, other furniture, or alongside a bed-sharer causing injury (Ateah & Hamelin, 2008, Kemp, Unger, Wilkins, Psara, Ledbetter, et al., 2000).

Health-care professionals recognize that families may choose to share a common sleep surface with their infant for a variety of reasons. The choice to share the same sleep surface may be influenced by a parent's/caregiver's observations that their infant is calmer and sleeps longer, or by the belief that the arrangement promotes bonding and helps to keep the infant warm. Sharing the same sleep surface may increase the rate and duration of breastfeeding (Horsely et al., 2007). However, given the risks related to sharing the same sleep surface, it is recommended that parents and caregivers be supported to find alternative ways to soothe an unsettled infant and encouraged to always place the infant on his/her own sleep surface.

RECOMMENDATION 3.6:

Support parents/caregivers in making an informed decision regarding pacifier use.

Level of Evidence = IV

Discussion of Evidence:

The decisions that parents/caregivers and families make regarding the care and sleep environment of their child are influenced by their beliefs, values, and other social circumstances. While respecting the rights of parents/caregivers to make such decisions, nurses have a responsibility to provide education and counselling to ensure that they make informed decisions (AWHONN, 2009; Canadian Nurses Association, 2008). Parents/caregivers and families may experience decisional conflict regarding infant care practices related to sleep, particularly when evidence-based information is limited or conflicting, as is the case for the use of pacifiers.

Primary studies and systematic reviews have shown an association between pacifier use and a decreased risk of SIDS (Callaghan, Kendall, Lock, Mahony, Payne, et al., 2005; Hauck, Omojokun & Siadaty, 2005; Mitchell, Blair & L'Hoir, 2006; Moon, Tanabe, Choi Yang, Young, & Hauck, 2012). However, there are methodological limitations in a number of studies involved in these reviews and controversy remains regarding whether pacifiers should be encouraged broadly as a preventative measure for SIDS. For instance, the protective role of a pacifier for SIDS is much smaller in studies that have compared routine use of a pacifier to non-use than in studies that examined use for last sleep, pointing to the presence of other factors that may have been different during the last night (for the SIDS victims). Further, a recent case-control study in the UK showed that SIDS rates significantly declined over a 10-year period despite decreasing pacifier use (and a marked increase in breastfeeding) (Blair et al., 2009).

Pacifier use may negatively impact the duration of breastfeeding, which itself is shown to have a protective effect against SIDS. In a systematic review of the literature, Callagan and colleagues (2005) showed that pacifier use, however defined, was associated with up to a threefold reduction in overall duration of breastfeeding. However, the impact of pacifier use on breastfeeding may vary based on the onset and frequency of use. Early pacifier users (infants who are two to five days old at introduction) are less likely to be exclusively breastfed after one month compared with non-users (Howard, Howard, Lanphear, Eberly, deBlieck, et al., 2003). Conversely, the negative impact on breastfeeding may be reduced by infrequent or part-time use of pacifiers (Callagan et al., 2005).

In summary, pacifiers may offer some protective effect against unexpected infant death during sleep. However, it is still unclear how pacifiers are best used to optimize this protection and how their use might affect other protective factors, such as breastfeeding. Pacifier use may also have other benefits or harms related to infant well-being that may be valued differently by each parent or caregiver – for example, pain relief, dentition, and otitis media. However, these considerations are outside the scope of this guideline. Overall, whether or not parents/caregivers choose to use a pacifier, the importance of other safe sleep practices should be emphasized.

RECOMMENDATION 3.7:

Provide health education about the risk of smoking during pregnancy and SIDS.

Level of Evidence = III

RECOMMENDATION 3.8:

Provide smoking cessation counseling before, during, and after pregnancy to women, family members and other caregivers identified as tobacco users.

Level of Evidence = III

RECOMMENDATION 3.9:

Encourage women, family members and other caregivers to promote a smoke-free environment during and after pregnancy.

Level of Evidence = III

Discussion of Evidence:

Maternal smoking (either in pregnancy or in the postnatal period) is a major independent risk for SIDS (Arnestad et al., 2001; Blair et al., 2009; Chong et al., 2004; Fleming et al., 2003; Jonville-Bera et al., 2001; Matthews et al., 2004; Mitchell & Milerad, 1999; Nelson et al., 2000; Paris et al., 2001; Pollack, 2001; Sanderson et al., 2002; Tanaka & Kato, 2001). Smoking during pregnancy has also been associated with increased risk of infant death by accidental suffocation and strangulation in bed (Behm, Kabir, Connolly & Alpert, 2012). Smoking during the prenatal period, in particular, may reduce oxygenation to the fetus, alter normal ventilatory and awakening responses to hypoxia in the infant, impair normal development of the neonatal airway and lung capacity, and lead to impairment of the immune system and greater susceptibility to airway infections and disease (Webb et al., 2010).

Providing smoking cessation counseling and encouraging a smoke-free environment are recommended to minimize health complications related to smoking and to help reduce the risks of unexpected infant death.

All involuntary exposure to tobacco smoke is harmful and should be eliminated (Ontario Tobacco Research Unit, 2000a). The scientific evidence indicates that there is no risk-free level of exposure to second-hand smoke. Exposure of non-smoking women to environmental tobacco smoke during pregnancy may also cause reductions in fetal growth (Ontario Tobacco Research Unit, 2000a). Children who are exposed to second-hand smoke are at an increased risk for SIDS (Behm et al., 2012), acute respiratory infections, ear problems, and more severe asthma.

The RNAO expert panel strongly recommends that the RNAO Best Practice Guideline Integrating Smoking Cessation into Daily Nursing Practice (2007b) be used to guide the provision of support to women, family members and other caregivers to promote a smoke-free environment for the infant.

RECOMMENDATION 3.10:

Provide health education about the risks associated with SIDS and alcohol and substance use and their potential effect during pregnancy and while caring for an infant.

Level of Evidence = III

Discussion of Evidence:

Alcohol and substance use, particularly during pregnancy, have been identified as risk factors for SIDS in a number of case-control (Blair et al., 2009; Iyasu et al., 2002; Matthews et al., 2004), and descriptive studies (King-Hele et al., 2007). In one study, SIDS was significantly associated with peri-conceptional maternal alcohol use and first trimester binge drinking, even when accounting for confounding factors, such as smoking (Isayu et al., 2002). In another study, recent parental use of alcohol or drugs, particularly when sharing the same sleep surface with the infant, was significantly associated with SIDS (Blair et al., 2009).

The precise mechanism by which alcohol and substance use may increase the risk of SIDS remains unclear. Alcohol and substance use affects people differently. Alcohol and substance use may impair judgment, reaction times, and ability to remain alert, which can impede a parent's/caregiver's capacity to effectively predict and respond to unsafe conditions and circumstances. However, in some individuals alcohol and some substances can cause physical, psychological, and social effects that may impair a parent's/caregiver's capacity to care for an infant. Parents/caregivers may experience drowsiness, loss of consciousness, feelings of paranoia, listlessness, apathy, loss of coordination, memory deficits, visual or hearing impairment, decreased reaction times, and attention deficits (Kroll & Taylor, 2000; Lundqvist, 2005).

Alcohol and substance use while responsible for the care of an infant is not recommended.

RECOMMENDATION 3.11:

Provide health education before, during, and after pregnancy to promote breastfeeding as a protective factor against SIDS.

Level of Evidence = III

Discussion of Evidence:

The risk of SIDS is reduced in breastfed infants. A recent meta-analysis evaluating 18 case-control studies on the relationship between breastfeeding and SIDS risk suggests that breastfeeding to any extent and of any duration is protective against SIDS (Hauck, Thompson, Tanabe, Moon & Vennemann, 2011). One study within the meta-analysis concluded that breastfeeding resulted in a 50% reduction for the risk of SIDS throughout infancy even after controlling for confounders (Vennemann et al., 2009b).

Breastfeeding includes receiving breast milk directly from the breast as well as drinking breast milk that has been expressed. The protective effect of breastfeeding on SIDS risk has been attributed to several factors, including the particular properties in breast milk and the lower arousal thresholds of breastfed infants, compared with formula fed infants (Horne, Parslow, Ferens, Watts & Adamson, 2004). Further research is needed to clarify whether it is the act of breastfeeding or the breast milk itself that offers the protective effect.

Breastfeeding can offer a range of benefits for infant health and development that are outside the scope of this document (Callaghan et al, 2005; Hauck et al, 2005; Oddy, 2002). For approaches on supporting breastfeeding, the RNAO expert panel recommends the RNAO Breastfeeding Best Practice Guideline for Nurses (2007a).

PRACTICE TIP: Breastfeeding on a sleep surface

Due to the increased risk of SIDS and unexpected infant death related to sharing a sleep surface, mothers who choose to breastfeed while lying on a sleep surface should be encouraged to place the infant in his/her own cradle, crib or bassinet once feeding is completed.

RECOMMENDATION 3.12:

Provide health education before, during, and after pregnancy about routine immunization of infants as a protective factor against SIDS.

Level of Evidence = III

Discussion of Evidence:

Immunizations protect against diseases that contribute to infant morbidity and mortality. Multiple vaccinations occur as part of an infant's immunization schedule during the first year. Because of the intersection with the peak incidence of

SIDS, a number of studies have investigated the influence of immunizations on the risk for SIDS. Vennemann and colleagues (2007) conducted a meta-analysis of nine case-control studies from the United Kingdom, the United States, France, New Zealand, and Germany. All studies used diphtheria, tetanus and pertussis vaccination (DTP) as an indicator of immunization, while some of the studies also included polio, haemophilus influenzae B, or hepatitis B vaccination. Based on the results, the researchers suggested that immunizations are associated with halving the risk of SIDS. Infants who are less likely to be immunized may also have other risk factors that affect their risk for SIDS. They may, for example, be sick or born into low socioeconomic circumstances.

Since the meta-analysis by Vennemann and colleagues (2007) was published, additional vaccines have been added to the routine immunization schedule for infants and children. However, these vaccines have not been studied in terms of whether they have any impact on the incidence of SIDS.

4.0 EVALUATION

RECOMMENDATION 4.1:

Evaluate parents'/caregivers' knowledge and implementation of safe sleep practices for infants.

Level of Evidence = IV

Discussion of Evidence:

Safe sleep practices encompass a variety of measures. The implementation of a plan to promote safe sleep for the infant is supported by teaching parents/caregivers about safe sleep practices, developing the plan in collaboration with the family, and modeling these behaviours in clinical practice. An evaluation is essential to determine whether parents/caregivers are able and prepared to implement this plan, or if further intervention is required. Documentation of this evaluation can inform subsequent encounters and facilitate continuity in care provided by other health-care providers involved with these families.

An evaluation of parents'/caregivers' safe sleep practices and/or their ability to implement a plan to promote safe sleep will need to consider the following:

- knowledge of non-modifiable and modifiable risk factors for SIDS
- use of a supine sleep position (unless medically contraindicated)
- use of an age-appropriate crib, cradle or bassinet that meets Canadian safety regulations
- safe sleep environments
- room-sharing with the infant (for the first six months)

Education Recommendations

5.0 RECOMMENDATIONS FOR EDUCATION

RECOMMENDATION 5.1:

Perform self-reflection on knowledge, judgment, perceptions, practices and beliefs regarding infant safe sleep environments to reduce barriers to health teaching and modeling of recommendations.

Level of Evidence = IV

Discussion of Evidence:

A combination of personal and professional experiences determines a nurse's knowledge, judgment, perceptions, practices, and beliefs regarding infant safe sleep environments. It can be challenging to provide supportive care to parents/caregivers and families when their beliefs differ from those of the nurse or when current evidence suggests that the nurse update his/her practice. Reflective practice is, "based on the concept that thinking systematically and critically about your practice enables you to identify the areas you need to work on to remain competent in a changing health care environment" (College of Nurses of Ontario, 2000, p. 6). The RNAO expert panel recommends ongoing self-reflection to help identify the barriers to providing effective care as well as one's strengths that may be drawn on to overcome these barriers.

PRACTICE TIP

Some questions that may facilitate reflective practice include:

What are your beliefs about safe sleep practices?

What are the sources of your beliefs and values about safe sleep practices?

Think about the last time you counseled a parent, caregiver or family regarding safe sleep practices. Describe what happened during that interaction. If it happened again, would your approach be any different?

RECOMMENDATION 5.2:

Include content about safe sleep practices for infants in all foundational nursing education programs.

Level of Evidence = IV

Discussion of Evidence:

The Canadian Nurses Association describes the “shared-care” model of responsibility and accountability for health and illness care. Under this model, nurses are increasingly expected to coordinate care, deliver direct services, help patients to understand their options, and guide them to navigate the health system (Villeneuve & MacDonald, 2006). As health-care workers with unique knowledge and skills, nurses engage in lifelong learning to be current with emerging knowledge and competent to provide safe patient care (College of Nurses of Ontario, 2011). Building upon the role of nurse as educator, facilitating discussions around safe sleep practices is a key component of providing care to families and parents/caregivers of infants and children. The RNAO expert panel recommends that this clinical content be a component of pre-licensure nursing education.

RECOMMENDATION 5.3:

Provide continuing education and educational resources regarding safe sleep practices for nursing staff of organizations involved in prenatal, postnatal, and community-based family care.

Level of Evidence = IV

Discussion of Evidence:

It is widely recommended that health-care professionals possess an up-to-date awareness of SIDS risk factors and safe sleep practice guidelines, through the provision of education, ongoing training, and the availability of high quality and consistent resources in the workplace (BC Coroners Service, 2009; Calgary Health Region, 2007; City of Milwaukee Health Department, 2010; Office of the Chief Coroner, Province of Ontario, 2008; Toronto Hospital for Sick Children, 2009). All staff involved in prenatal and postnatal care should be held accountable for practicing within this context (Calgary Health Region, 2007), and this requires the development of evidence-based curriculum for all nurses, the completion of which could be made mandatory (City of Milwaukee Health Department, 2010).

A variety of training methods may be used to facilitate safe sleep knowledge and practices among health-care providers. These include lectures, online learning, and mandatory workshops (Colson & Joslin, 2002; Mizzi, Parascandalo & Montalto, 2008; Price, Hillman, Gardner, Schenk & Warren, 2008). However, education alone may not be sufficient to change practice (Shaefer, Herman, Frank, Adkins & Terhaar, 2010). This points to the need for additional strategies – such as policies, resources and reminders – to facilitate the desired behaviour. A comprehensive educational program involving multiple components to promote the uptake of knowledge (e.g., formal training for staff) and application to practice (e.g., integration of evidence into policies, documentation, equipment, and patient education materials) may best ensure the sustainability of the training provided to optimize safe sleep practices (McMullen, Lipke & LeMura, 2009).

Organization and Policy Recommendations

6.0 RECOMMENDATIONS FOR ORGANIZATION AND POLICY

RECOMMENDATION 6.1:

Advocate for education, training, and resources for alternate caregivers regarding safe sleep practices for infants.

Level of Evidence = III

Discussion of Evidence:

Alternate caregivers are individuals or groups that may be involved in promoting the health and well-being of an infant. They may include prenatal educators, doulas, midwives, child-care providers, early childhood educators, parent support workers, St John Ambulance staff, parent organizations, parents and support staff with the Children's Aid Society, staff at shelters, grandparents, and babysitters.

Unexpected deaths during sleep may occur while infants are in the care of alternate caregivers, such as in day care centres (de Jonge et al., 2004; Moon, Patel, & Shaefer, 2000). While parents and families may be most likely to receive advice and instruction related to safe sleep practices, it is imperative that alternate caregivers are also provided with the education and training to promote safe sleep for infants. Educational modules, training programs, and the development of appropriate policies can assist alternate caregivers to provide care aligned with current safe sleep recommendations.

Targeted education regarding safe sleep practices for alternate caregivers has been advocated by a number of health authorities (American Academy of Pediatrics, American Public Health Association & National Resource Center for Health and Safety in Child Care, 2002; American Academy of Pediatrics, 2005; American Public Health Association, 2003; City of Milwaukee Health Department, 2010; IMPACT, 2008; Task Force for Sudden Infant Death Syndrome, 2011a). Structured risk reduction programs designed to provide training in day care centres have been shown to improve safe sleep practices, including the use of a supine sleep position (Moon, Calabrese & Aird, 2008). Moreover, government regulations for safe sleep practices in child-care facilities, as well as a programmatic approach to implementing these regulations, may facilitate the standardization of policies across individual centers (Stubbs-Wynn, Krajicek, Hamilton, Collins & Torrey, 2004; Dayie, Aronson, Jansen-McWilliams & Kelleher, 2001; Moon, Kotch & Aird, 2006).

RECOMMENDATION 6.2:

Participate in research regarding morbidity and mortality as it relates to infant sleep.

Level of Evidence = IV

Discussion of Evidence:

Research that informs safe sleep practices for infants should continue at the local, regional, and national level, and research findings should be communicated to health-care providers, decision-makers, and the public (BC Coroners Service, 2009; Task Force for Sudden Infant Death Syndrome, 2011a, 2011b; Irish National Sudden Infant Death Registrar, 2008). To better facilitate the implementation of preventative measures, research efforts should address the etiology, risk factors, and effective interventions to reduce the rates of unexpected death, including SIDS, and unintentional injuries in the infant sleep environment. Stakeholder organizations that are involved in ensuring the health and well-being of infants and families are encouraged to contribute to such efforts. The section Research Gaps and Future Implications in this document provides examples of priority areas for research related to safe sleep for infants.

RECOMMENDATION 6.3:

Advocate for improved systems for reporting and monitoring of morbidity and mortality related to infant sleep.

Level of Evidence = IV

Discussion of Evidence:

The current body of evidence related to safe sleep is challenged by inconsistencies in reporting and diagnostic criteria. Moving forward, there is a need to develop standard criteria for defining and classifying SIDS to ensure the accuracy of infant death records and SIDS research initiatives (American Public Health Association, 2002; BC Coroners Service, 2009; Task Force for Sudden Infant Death Syndrome, 2011a; National Health Services Derby City: Child Death Review Panel, 2010). This may require international consensus on a SIDS classification system, as well as uniform guidelines and training curriculum regarding SIDS classification by death investigators, first responders, and perinatal infant mortality review personnel (BC Coroners Service, 2009). Standardized training and protocols to facilitate consistency in practices have been suggested because potential misinterpretations of causes of death and associated factors may result from inconsistencies (Graham, Hendrix & Schwalberg, 2009).

The current body of evidence regarding unintentional injuries specific to the sleep environment is limited. Clear monitoring and documentation of injury in the sleep environment would foster a better understanding of priority issues.

RECOMMENDATION 6.4:

Develop policies that support the implementation of safe sleep practice recommendations in all organizations involved in prenatal, postnatal, and community-based family care.

Level of Evidence = IV

Discussion of Evidence:

Organizations should develop policies that reinforce safe sleep practices for patients and staff (Canadian Pediatric Society, 2004 & 2010; First Candle, 2006; IMPACT, 2008, Toronto Hospital for Sick Children, 2009). Policy should also specifically address conditions where safe sleep practices may need to be adapted, temporarily, for medically complex patients (Toronto Hospital for Sick Children, 2009; First Candle, 2006). In these instances, policy should indicate that health-care professionals work toward implementing safe sleep practices well before anticipated discharge from hospital to ensure appropriate practices are modeled for and understood by parents/caregivers (American Academy of Pediatrics, 2005). Policies may be useful in promoting safe sleep for infants as they facilitate the consistency and sustainability of evidence-based safe sleep practices among staff (McMullen et al, 2009; Shaefer et al., 2010; Toronto Hospital for Sick Children, 2009). However, to ensure that the policies are appropriate and feasible to implement within the local context, the commitment of stakeholders at all levels of organizational administration in policy development is vital (McMullen et al., 2009; Thompson, 2005).



Research Gaps and Future Implications

The RNAO expert panel, in reviewing the evidence for this edition of the guideline, identified the following priority research areas. These areas have been broadly categorized into practice, outcomes and health system (see Table 1).

Table 1. Priority Practice, Outcomes and Health System Research Areas

CATEGORY	PRIORITY RESEARCH AREA
Practice Research	Safety of infant sleep in various devices (e.g., baby swing, car seat, etc.)
	Safety of using a playpen or play-yard as a temporary sleep surface for travel or when space is limited
	Safety of skin-to-skin care in the home setting
	Effectiveness of strategies to educate parents/caregivers about safe sleep practices
Outcomes Research	Multi-site studies to identify current risk and protective factors for SIDS
	Effectiveness of smoking cessation programs for pregnant women and families with infants
	Mechanisms explaining factors that increase the risk for SIDS and unexpected death (e.g., respiratory dysfunction and hypoxia as potential mechanisms)
	Mechanisms explaining factors that are protective of SIDS (e.g., breastfeeding, routine immunization)
	Identifying risk factors associated with unexpected deaths in child-care settings
Health System Research	Establishment of classification criteria for infant deaths, including SIDS
	Factors that encourage or discourage safe sleep practices in health-care settings and child-care settings (e.g. day care)

The above table, although in no way exhaustive, is an attempt to identify and prioritize the critical amount of research that is needed in this area. Many of the recommendations in this guideline are based on quantitative and qualitative research evidence, while others are based on consensus or expert opinion. Further substantive research is required to validate the expert opinion. More research evidence can expand knowledge, enhancing nursing practice and leading to better outcomes for infants and families.

Implementation Strategies

Implementing guidelines at the point of care is multifaceted and challenging; it takes more than awareness and distribution of guidelines to get people to change how they practice. Guidelines must be adapted for each practice setting in a systematic and participatory way, to ensure recommendations fit the local context (Straus et al, 2009). Our *Toolkit: Implementation of Best Practice Guidelines (2nd ed.)* (RNAO, 2012) provides an evidence-informed process for doing that.

The *Toolkit* is based on emerging evidence that successful uptake of best practice in health care is more likely when:

- Leaders at all levels are committed to supporting guideline implementation;
- Guidelines are selected for implementation through a systematic, participatory process;
- Stakeholders for whom the guideline is relevant are identified and engaged in the implementation;
- Environmental readiness for implementing guidelines is assessed;
- The guideline is tailored to the local context;
- Barriers and facilitators to using the guideline are assessed and addressed;
- Interventions to promote use of the guideline are selected;
- Use of the guideline is systematically monitored and sustained;
- Evaluation of the guideline’s impact is embedded in the process;
- There are adequate resources to complete all aspects of the implementation.

The Toolkit (RNAO, 2012) uses the “Knowledge-to-Action” framework (Straus et al., 2009) to demonstrate the process steps required for knowledge inquiry and synthesis. It also guides the adaptation of the new knowledge to the local context and implementation. This framework suggests identifying and using knowledge tools such as guidelines, to identify gaps and to begin the process of tailoring the new knowledge to local settings. For more information about the Toolkit, see [Appendix G](#).

The Registered Nurses’ Association of Ontario (RNAO) is committed to widespread deployment and implementation of our guidelines. We use a coordinated approach to dissemination, incorporating a variety of strategies, including the Nursing Best Practice Champion Network®, which develops the capacity of individual nurses to foster awareness, engagement and adoption of BPGs; and the Best Practice Spotlight Organization® (BPSO®) designation, which supports implementation at the organizational and system levels. BPSOs focus on developing evidence-based cultures with the specific mandate to implement, evaluate and sustain multiple RNAO best practice guidelines. In addition, we offer capacity-building learning institutes on specific guidelines and their implementation annually. (RNAO, 2012, p.19-20).

Information about our implementation strategies can be found at:

- Registered Nurses’ Association of Ontario (RNAO) Best Practice Champions Network: <http://rnao.ca/bpg/get-involved/champions>
- RNAO Best Practice Spotlight Organizations: <http://rnao.ca/bpg/bpso>
- RNAO capacity-building learning institutes and other professional development opportunities: <http://rnao.ca/events>
- RNAO’s nursing order sets^G as a tool to facilitate BPG implementation, please email BNOS@rnao.ca.

Evaluation and Monitoring of this Guideline

Organizations that implement the recommendations in this nursing Best Practice Guideline (BPG) are advised to consider how to monitor and evaluate the implementation and impact of the recommendations.

Table 2 is based on a framework outlined in Toolkit: Implementation of Best Practice Guidelines (2nd ed.) (RNAO, 2012) and it illustrates some specific indicators for monitoring and evaluating on the impact of the RNAO guideline, Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age.

TABLE 2. Structure, Process and Outcome Indicators for Monitoring and Evaluating This Guideline

LEVEL OF INDICATOR	STRUCTURE	PROCESS	OUTCOME
Objectives	<ul style="list-style-type: none"> To evaluate the supports available in the organization that allow for nurses and the interprofessional team to integrate into their practice the BPG, Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age 	<ul style="list-style-type: none"> To evaluate the changes in practice that lead towards improved assessment and promotion of safe sleep practices for infants 0-12 months of age 	<ul style="list-style-type: none"> To evaluate the impact of implementing of the guideline recommendations

LEVEL OF INDICATOR	STRUCTURE	PROCESS	OUTCOME
<p>Organization/ Unit</p>	<ul style="list-style-type: none"> ■ Review of best practice recommendations by organizational committee(s) responsible for policies and procedures ■ Availability of patient education resources that are consistent with best practice recommendations ■ Provision of accessible resource people for nurses and the interprofessional team to consult for ongoing support during and after the initial implementation period ■ Continuing education and training to support nursing interventions to promote safe sleep ■ Ongoing access to current safe sleep statements and guidelines 	<ul style="list-style-type: none"> ■ Development of forms or documentation systems that encourage documentation of assessment and promotion of safe sleep practices for infants 0-12 months of age ■ Concrete procedures for making referrals to internal and external resources and services 	<ul style="list-style-type: none"> ■ Incorporation of Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age in staff orientation program ■ Referrals internally and externally

LEVEL OF INDICATOR	STRUCTURE	PROCESS	OUTCOME
Provider	<ul style="list-style-type: none"> ■ Percentage of health-care providers that attend the best practice guideline education sessions on assessment and promotion of safe sleep practices for infants 0-12 months of age 	<ul style="list-style-type: none"> ■ Self-assessed knowledge of assessment and promotion of safe sleep practices for infants 0-12 months of age ■ Average self-reported awareness levels of community referral sources for parents/caregivers and families of infants 0-12 months of age 	<ul style="list-style-type: none"> ■ Evidence of documentation in the client’s record consistent with the guideline recommendations ■ Referral, as necessary, to the following services or resources within the community or within the organization: smoking cessation programs, social work, lactation consultant, family physician ■ Provision of education and support to client and family members ■ Parent/caregiver/family satisfaction

RECOMMENDATIONS

LEVEL OF INDICATOR	STRUCTURE	PROCESS	OUTCOME
Client	<ul style="list-style-type: none"> ■ Percentage of clients with infants counselled with respect to safe sleep practices for infants 0-12 months of age 	<ul style="list-style-type: none"> ■ Percentage of clients with infants with documented evidence of an assessment related to safe sleep ■ Percentage of clients with infants with documentation of education and education materials provided to them addressing safe sleep practices 	<ul style="list-style-type: none"> ■ Improvement in client satisfaction in health teaching received regarding safe sleep practices ■ Percentage of clients placing infant to sleep in the supine position ■ Percentage of infants fed by breastfeeding ■ Percentage of pregnant women and infants exposed to smoke/ smoking ■ Percentage of clients avoiding alcohol and substance use during pregnancy or when responsible for child care ■ Percentage of infants remaining free from illness, injury or death in the sleep environment ■ Percentage of clients accessing referral sources in community

LEVEL OF INDICATOR	STRUCTURE	PROCESS	OUTCOME
Financial Costs	<ul style="list-style-type: none"> ■ Provision of adequate financial resources for the level of staffing necessary to implement guideline recommendations 	<ul style="list-style-type: none"> ■ Cost related to implementing guideline: <ul style="list-style-type: none"> ● Assessment procedures ● Education and access to on-the-job supports ● New documentation systems ● Support systems 	<ul style="list-style-type: none"> ■ Cost efficiency and effectiveness of interventions ■ Overall resource utilization ■ Length of stay in health system ■ Hospital readmission rates

RECOMMENDATIONS

Process for Guideline Update and Review of the Guideline

The Registered Nurses' Association of Ontario proposes to update this best practice guideline as follows:

1. Each nursing BPG will be reviewed by a team of specialists (RNAO expert panel) in the topic area. The review is to be completed every five years following publication of the last edition.
2. During the period between development and publication of a new edition, RNAO International Affairs and Best Practice Guideline (IaBPG) Centre staff will regularly monitor for new systematic reviews, randomized controlled trials, and other relevant literature in the field.
3. Based on the results of this monitoring, RNAO IaBPG Centre staff may recommend an earlier revision period. Appropriate consultation with a team of members comprised of original RNAO expert panel members and other specialists and experts in the field will help inform the decision to review and revise the guidelines earlier than the targeted milestone.
4. Three months prior to the review milestone, the RNAO IaBPG Centre staff will commence the planning of the review process. Staff will:
 - a) Invite specialists in the field to participate on the RNAO expert panel. The RNAO expert panel will be comprised of members from the original panel as well as other recommended specialists and experts.
 - b) Compile feedback received and questions encountered during the implementation, including comments and experiences of Best Practice Spotlight Organizations® (BPSO®) and other organization implementation sites regarding their experience.
 - c) Compile new clinical practice guidelines in the field and conducting a systematic review of the evidence.
 - d) Develop a detailed work plan with target dates and deliverables for developing a new edition of the BPG.
5. New editions of guidelines developed will undergo dissemination based on established structures and processes.

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Appendix A: Glossary of Terms

Best Practice Guidelines: Systematically developed statements to assist practitioner and client decisions about appropriate health care for specific clinical (practice) circumstances (Field & Lohr, 1990).

Client: A client may be an individual (patient, resident, consumer), family, substitute decision-maker (SDM), group or community (College of Nurses of Ontario [CNO], 2006; Mental Health Commission of Canada, 2009).

Client-Centered Care Approach: An approach in which clients are viewed as whole; it is not merely about delivering services where the client is located. The client-centered care approach involves advocacy, empowerment, and respecting the client's autonomy, voice, self-determination and participation in decision-making (CNO, 2006; Registered Nurses' Association of Ontario [RNAO], 2006).

Clinical Practice Guidelines: See Best Practice Guidelines.

Consensus: A process for making policy decisions, not a scientific method for creating new knowledge. Consensus development makes the best use of available information, be that scientific data or the collective wisdom of the participants (Black et al., 1999).

Culture: Culture refers to the shared and learned values, beliefs, norms and ways of life of an individual or a group. It influences thinking, decisions and actions (CNO, 2006).

Education Recommendations: Statements of educational requirements and educational approaches/strategies for the introduction, implementation and sustainability of the best practice guideline.

Evidence: Evidence is information that comes closest to the facts of a matter. The form it takes depends on context. The findings of high-quality, methodologically appropriate research provides the most accurate evidence. As research is often incomplete and sometimes contradictory or unavailable, other kinds of information are necessary supplements to, or stand-ins for research. The evidence base for a decision involves combining the multiple forms of evidence and balancing rigor with expedience, privileging the former over the latter (Canadian Health Services Research Foundation, 2006).

Interprofessional Team: Refers to the provision of comprehensive health services to patients by multiple health caregivers who work collaboratively to deliver quality care within and across settings (Health Care Innovation Workgroup, 2012).

Nursing Order Set: A nursing order set is a group of evidence-based interventions that are specific to the domain of nursing; it is ordered independently by nurses (i.e., without a physician's signature) to standardize the care provided for a specific clinical condition (e.g. pressure ulcers).

Organization and Policy Recommendations: Statements of conditions required for a practice setting that enables the successful implementation of the best practice guideline. The conditions for success are largely the responsibility of the organization, although they may have implications for policy at a broader government or societal level.

Practice Recommendations: Statements of best practice directed at the practice of health care professionals that are ideally evidence-based.

Randomized Controlled Trials: Clinical trials that involve at least one test treatment and one control treatment, concurrent enrollment and follow-up of the test- and control-treated groups, and in which the treatments to be administered are selected by a random process.

Room-Sharing: Circumstance in which the infant/child and adult use separate sleep surfaces within the same room (e.g. adult bed and crib in same room). For the purposes of this review, room-sharing is distinguished from the circumstance where the infant and adult are sharing the same sleep surface (e.g. sharing an adult bed or sofa).

Safe Sleep Environment: An infant is in a safe sleep environment when placed in a crib, cradle, or bassinet that meets Canadian safety regulations and that is kept free of any extra items other than the mattress and fitted sheet (Public Health Agency of Canada, 2011).

Sharing the Same Sleep Surface: The practice of sharing a sleep surface between adults and infants can include but is not exclusively defined by sharing the same bed. It may also include sleeping on other surfaces, such as sofas and armchairs. Synonymous terms in the literature may include bed-sharing or co-sleeping. For the purpose of this review it does not refer to room-sharing whereby infant/child and adult use separate sleep surfaces within the same room (e.g. An adult bed and crib in the same room).

Sleep Environment: For the purpose of this guideline, a sleep environment is defined as anywhere an infant falls asleep, at any time.

Sleep Product: For the purpose of this guideline, a sleep product is defined as any product that is manufactured and marketed for use in an infant's sleep environment that has not been tested for safety by Health Canada Consumer Product Safety division.

Stakeholder: An individual, group or organization with a vested interest in the decisions and actions of organizations and who may attempt to influence decisions and actions (Baker et al., 1999). Stakeholders include all individuals or groups who will be directly or indirectly affected by the change or solution to the problem.

Sudden Infant Death Syndrome (SIDS): The sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history (Beckwith, 2003).

Sudden Unexpected Death in Infancy: The death of an infant that is unexpected because the infant was thought to be healthy.

Systematic Review: The Cochrane Collaboration (2011) states that, “a systematic review attempts to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question”. A systematic review uses systematic, explicit and reproducible methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review (The Cochrane Collaboration, 2011).

Unintentional Injuries: Unintentional injuries result when a series of events leads to someone being hurt, disabled, or killed through unplanned damage to the body (Ministry of Health Promotion, 2007).



Appendix B: Guideline Development Process

The Registered Nurses' Association of Ontario (RNAO), with funding from the Government of Ontario, has embarked on a multi-year program of nursing best practice guideline development, pilot implementation, evaluation, dissemination and support of uptake. One of the areas of emphasis is on nursing interventions related to safe sleep for infants. An expert panel of nurses and other health-care professionals convened by the RNAO developed this guideline. This work was conducted independent of any bias or influence from the Ontario Government.

In October 2010, an expert panel of nurses and health-care professionals from a range of practice settings with expertise in practice, education and research regarding safe sleep for infants was convened under the auspices of the RNAO. The expert panel discussed the purpose of their work, and came to consensus on the scope of this best practice guideline. It was the consensus of the RNAO expert panel that the development of the following clinical questions was critical to the development of guideline recommendations:

1. What factors in the physical environment influence safe sleep for infants?
2. What parent/caregiver and child attributes influence safe sleep for infants?
3. What health-care provider interventions effectively promote safe sleep for infants?
4. What health-care provider education and training is required to effectively promote safe sleep for infants?
5. How do health-care organizations support and promote safe sleep for infants?

Subsequently, a systematic review of the evidence based on the scope of the guideline and supported by the five clinical questions listed above was conducted to capture the relevant literature and guidelines published between January 2000 – September 2013.

Appendix C: Process for Systematic Review and Search Strategy

Guideline Review

A member of the RNAO guideline development team (project coordinator) searched an established list of websites for guidelines and other relevant content published between 2005 and 2011. This list was compiled based on existing knowledge of evidence-based practice websites and recommendations from the literature. Guidelines were also identified by members of the RNAO expert panel. Members of the expert panel critically appraised three international guidelines using the Appraisal of Guidelines for Research and Evaluation Instrument II (Brouwers et al., 2010). From this review, all three guidelines were selected to inform the review process:

American Academy of Pediatrics:

- Task Force on Sudden Infant Death Syndrome. (2011a). SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*, 128(5), 1030-1039.
- Task Force on Sudden Infant Death Syndrome. (2011b). SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*, 128(5), e1341-1367

Perinatal Services BC:

- Perinatal Services BC. (2011). Health Promotion Guideline 1: Safe Sleep Environment Guideline for Infants 0 to 12 Months of Age. Perinatal Services BC: Vancouver.

Queensland Health:

- Queensland Health. (2008). Safe Infant Care to Reduce the Risk of Sudden Unexpected Deaths in Infancy Policy Statement and Guidelines. Brisbane, Australia: Queensland Health.

Systematic Review

Concurrent with the review of existing guidelines, a search for recent literature relevant to the scope of the guideline was conducted with guidance from the Chair of the RNAO expert panel. The systematic literature search was facilitated by a health sciences librarian. The search, limited to English-language articles published between 2000 and 2012, was applied to CINAHL, Embase, DARE, Medline, Cochrane Central Register of Controlled Trials and Cochrane Database of Systematic Reviews. Detailed information about the search strategy for the systematic review, including the inclusion and exclusion criteria as well as search terms, is available online at [www.http://rnao.ca/bpg/guidelines/safe-sleep-practices-infants](http://rnao.ca/bpg/guidelines/safe-sleep-practices-infants). Two Research Assistants (Master's prepared nurses) independently assessed the eligibility of studies according to established inclusion/exclusion criteria. The RNAO Best Practice Guideline (BPG) Program Manager involved in supporting the RNAO expert panel, resolved disagreements.

Quality appraisal scores for 369 articles were independently assessed by two RNAO nursing research associates. Any disagreements were resolved using consensus and consultation with the Program Manager. A final summary of literature findings was completed. The comprehensive data tables and summary were provided to all expert panel members. In September 2012, the RNAO expert panel convened to achieve consensus on the need to develop the guideline recommendations and discussion of evidence.

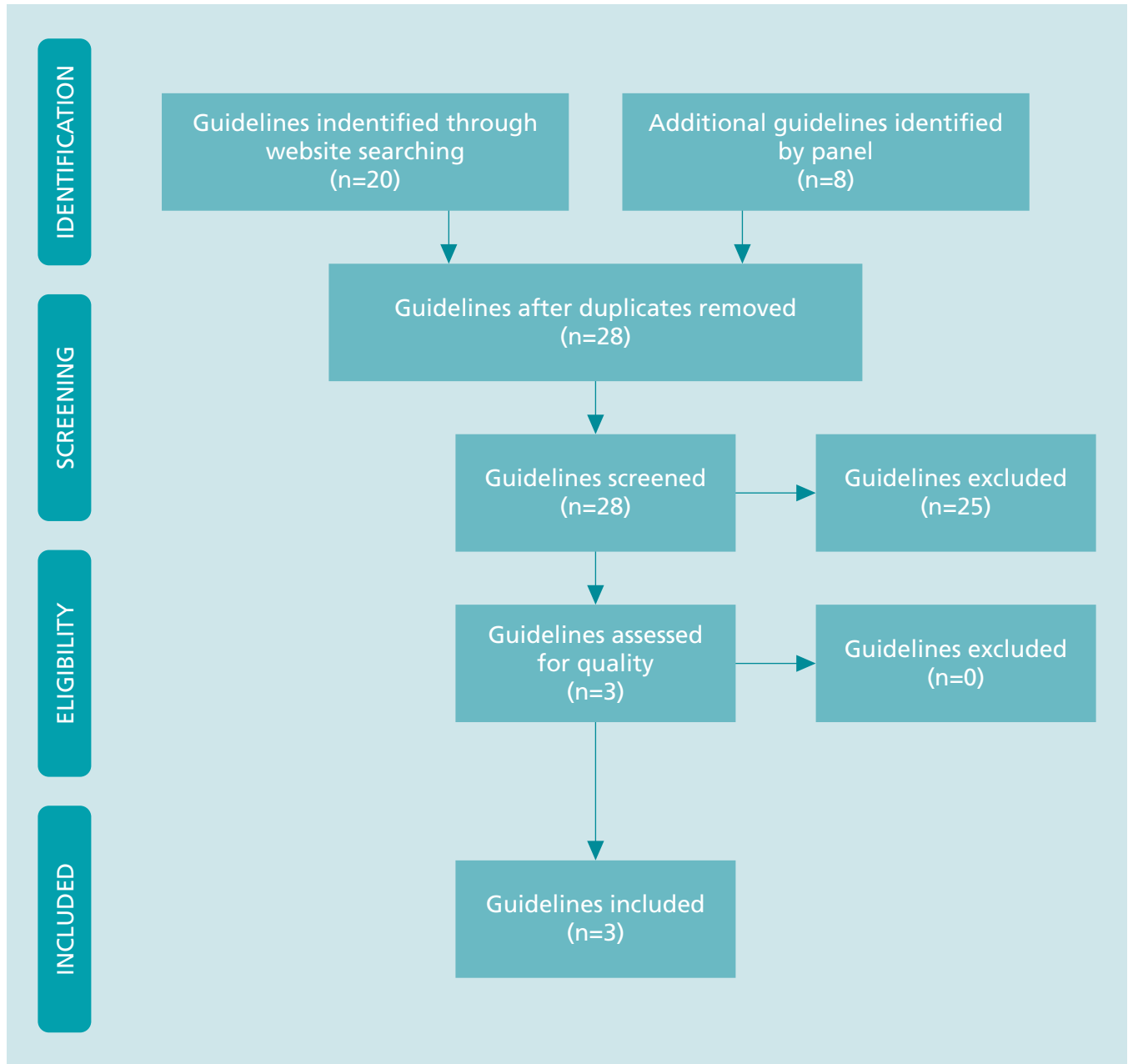
An additional database search of articles published since the initial search (January 1, 2012 to September 30, 2013) was conducted to ensure no recently published research relating to the topic and guideline Working with Families to Promote Safe Sleep for Infants 0-12 Months of Age resulted in new findings. This updated search returned 926 records, 73 of which were duplicates. Title and abstract screening conducted on the remaining 853 articles by an RNAO nursing research associate resulted in the selection of 33 articles for full-text review. Quality appraisal and data extraction of these articles by the nursing research associate resulted in the inclusion of 21 additional articles in the systematic review. The RNAO expert panel agreed that the included articles offered no new findings but did further support the content already identified in the initial systematic review.

A total of 213 articles were included in the systematic review. The following flow diagrams of the review process for guidelines and articles are presented according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher, Liberati, Tetzlaff, Altman & The PRISMA Group, 2009).

A complete Bibliography of all full-text articles screened for inclusion is available on-line at <http://rnao.ca/bpg/guidelines/safe-sleep-practices-infants>.

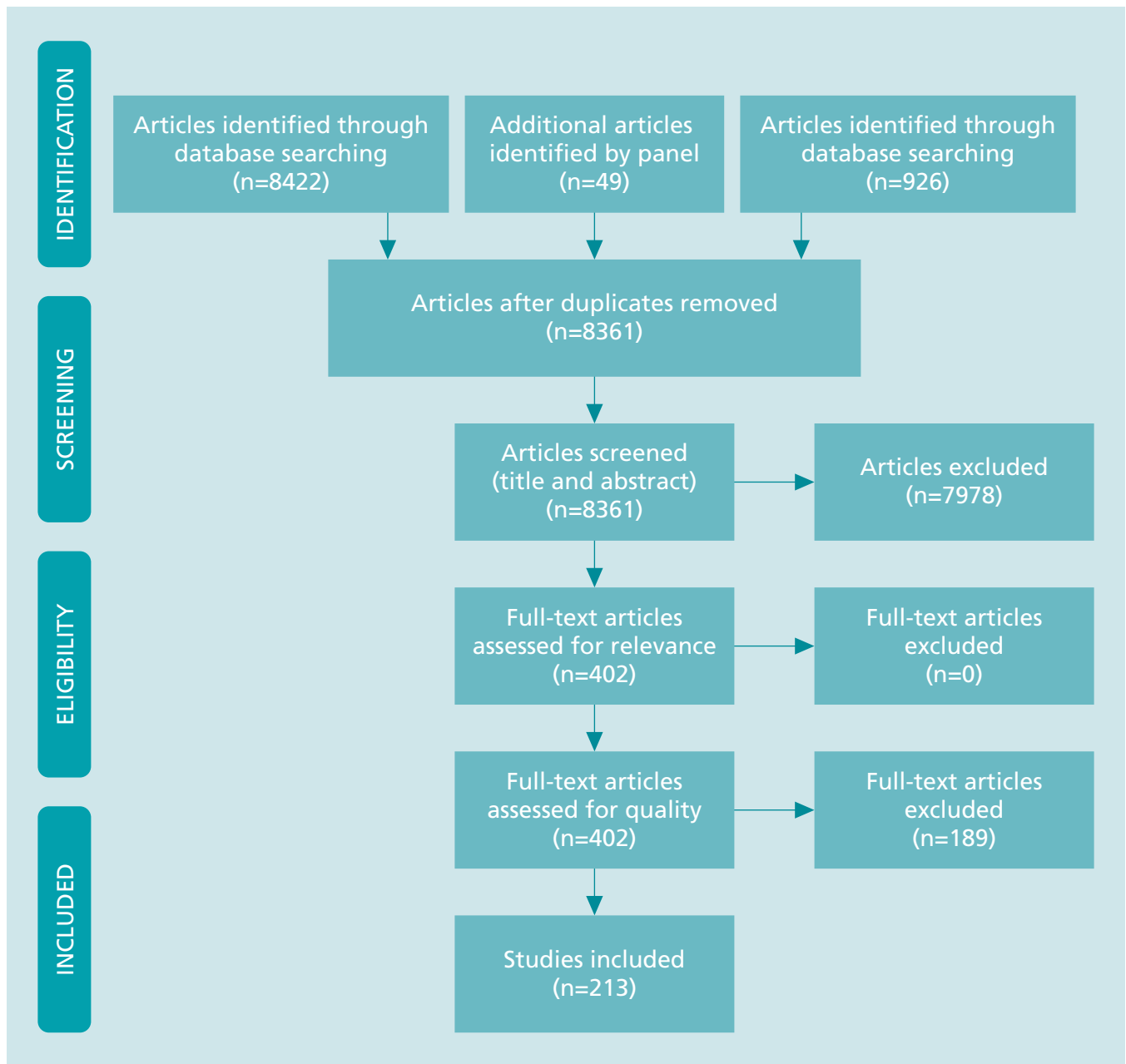


Guideline Review Process Flow Diagram



Flow diagram adapted from D. Moher, A. Liberati, J. Tetzlaff, D.G. Altman, & The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *BMJ* 339, b2535, doi: 10.1136/bmj.b2535

Article Review Process Flow Diagram

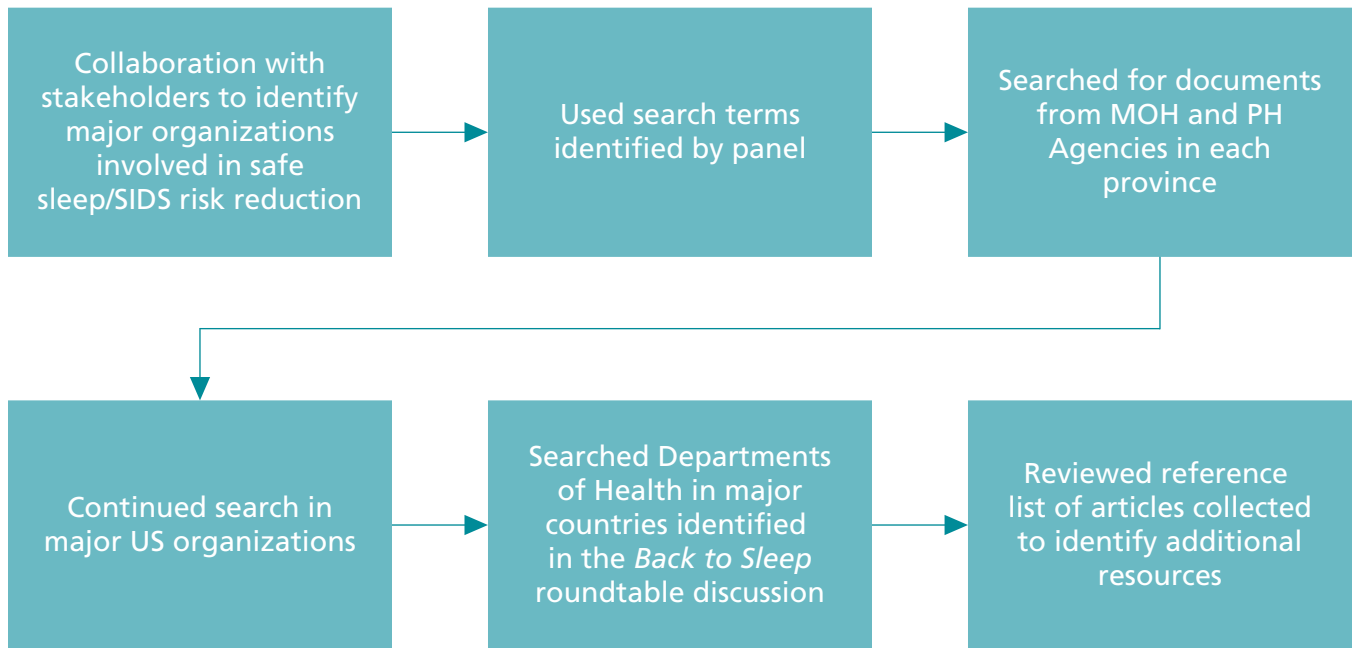


Flow diagram adapted from D. Moher, A. Liberati, J. Tetzlaff, D.G. Altman, & The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *BMJ* 339, b2535, doi: 10.1136/bmj.b2535

Grey Literature Search

Recognizing the role of stakeholder organizations in developing policies related to safe sleep, a search for grey literature was conducted in the summer of 2011. In collaboration with the RNAO expert panel, a list of relevant stakeholder organizations was developed. A website search for each organization was then conducted to identify documents that may be relevant to the research questions. The search strategy for grey literature is outlined in Figure I. After the identification of documents, specific recommendations from each document were extracted.

Figure 1: Grey Literature Search Strategy



Note: MOH, Ministry of Health; PH, Public Health

The grey literature search resulted in a total of 18 documents by 15 different provincial, national, and international organizations. These documents included practice guidelines, policy statements and organizational reports. These documents included:

ORGANIZATION (JURISDICTION)	DOCUMENT
British Columbia Coroners Service (British Columbia, Canada)	BC Coroners Service. (2009). <i>Safe and sound: A five year retrospective report on sudden infant death in sleep-related circumstances</i> . Burnaby, BC: Child Death Review Unit.
Guideline Committee of the British Columbia Reproductive Care Program (British Columbia, Canada)	Guideline Committee of the British Columbia Reproductive Care Program. (2006). <i>BCRCP guideline: Tobacco use in the perinatal period</i> . Vancouver, BC: British Columbia Reproductive Care Program.
Calgary Health Region (Alberta, Canada)	Calgary Health Region: Regional Infant Sleep Committee. (2007). <i>Best practice guidelines for infant sleep practices – Bed-sharing</i> . Calgary, AB: Calgary Health Region.
IMPACT (Manitoba, Canada)	IMPACT: The Injury Prevention Centre of Children’s Hospital. (2008). <i>A review of best practices: Preventing suffocation and choking injuries in Manitoba</i> . Winnipeg, MB: Manitoba Health.
Office of the Chief Coroner – Province of Ontario (Ontario, Canada)	Office of the Chief Coroner – Province of Ontario. (2008). <i>Report of the paediatric death review committee and deaths under five committee</i> . Toronto, ON: Office of the Chief Coroner.
Toronto Hospital for Sick Children (Ontario, Canada)	Toronto Hospital for Sick Children. (2009). <i>Hospital-wide patient care guideline: Safe sleep environment for infants</i> . Toronto, ON: SickKids.
Canadian Pediatric Society (Canada)	Canadian Pediatric Society. (2010). <i>Safe discharge of the late preterm infant</i> . Ottawa, ON: Canadian Pediatric Society.
	Canadian Pediatric Society. (2004). <i>Recommendations for safe sleeping environments for infants and children</i> . Ottawa, ON: Canadian Pediatric Society.
Health Canada (Canada)	Health Canada. (2005). <i>Policy Statement for Bumper Pads</i> . Retrieved from http://archive.is/aWjXa

ORGANIZATION (JURISDICTION)	DOCUMENT
American Academy of Pediatrics (USA)	American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care. (2002). Reducing the risk of sudden infant death syndrome (SIDS). Elk Grove Village, IL: American Academy of Pediatrics.
	Policy statement – The changing concept of sudden infant death syndrome: Diagnostic coding shifts, controversies regarding the sleep environment, and new variables to consider in reducing risk. (2005)
American Public Health Association (USA)	American Public Health Association. (2002). Policy statement: Promoting evidence-based smoking cessation interventions for women before, during, and after pregnancy. Washington, DC: American Public Health Association.
	American Public Health Association. (2003). Policy statement: Supporting actions to reduce the risk of sudden infant death syndrome (SIDS) in out-of- home child care settings. Washington, DC: APHA.
City of Milwaukee Health Department (USA)	City of Milwaukee Health Department. (2010). Safe sleep summit. Milwaukee, WI: City of Milwaukee Health Department.
First Candle (USA)	First Candle. (2006). Model behaviour: Sample policy and procedures – Safe sleep practices for the neonatal intensive care unit. Baltimore, MD: First Candle.
National Institute of Child Health and Human Development (USA)	National Institute of Child Health and Human Development. (2001). Targeting sudden infant death syndrome (SIDS) : A strategic plan. Washington, DC: U.S Government Printing Office.
National Health Services Derby City (UK)	National Health Services Derby City: Child Death Review Panel. (2010). Policy/guidance to support safe sleeping practices in babies and infants. Derby, UK: National Health Services.
Irish National Sudden Infant Death Registrar (Ireland)	Irish National Sudden Infant Death Registrar. (2008). Sudden Infant Death Syndrome Report for 2008. Dublin, Ireland: Irish National Sudden Infant Death Registrar.

Appendix D: Overview of Factors Associated with a Higher Risk of Unexpected Death in Infants while Sleeping

The following practices may place infants at a higher risk for injury or death in the sleep environment. Identify practices used by parents/caregivers and/or alternate caregivers. Any and all identified risks should be accompanied by health teaching.

LIFESTYLE RISK FACTORS OF THE PREGNANT WOMAN, PARENTS, OR OTHER CAREGIVERS

- Smoking
- Alcohol use
- Substance use

CAREGIVING PRACTICES

- Non-breastfeeding
- Lack of immunization and/or health care for the infant
- Over-dressing (overheating) infant
- Exposing infant to potential hazards in their sleep environment (cords, open windows, heating devices)

RISK FACTORS RELATED TO INFANT SLEEP POSITION AND THE SLEEPING ENVIRONMENT

- Non-supine sleep position
- Use of sleep surface not recommended for infant sleep
 - Adult bed
 - Sofas, couches, armchairs
 - Baby seats, swings, bouncers, strollers, slings, car seats
 - Play pens, play-yards
- Sharing the same sleep surface with another person or animal
- Extra items in the sleep environment
 - Blankets and duvets
 - Pillows and pillow-like items
 - Positioning devices or wedges
 - Bumper pads

The following characteristics have an increased association with the incidence of infant death. While these factors may not all be modifiable, it is especially important to create a safe sleep environment for infants affected by them.

CHARACTERISTICS OF PARENTS / CAREGIVERS

- Parental mental illness
- Low socio-economic status
 - Young maternal age < 18 years
 - Non-married
 - Low maternal educational level
 - Low income
- Beliefs that are incongruent with safe sleep recommendations
- Knowledge deficit about safe sleep recommendations

OBSTETRICAL FACTORS OF THE MOTHER

- Lack of or late initiation of prenatal care
- High parity
- Multiple pregnancies
- Short intervals between pregnancies
- Previous infant small for gestational age or pre-term
- Placental abnormalities (placenta previa or abruptio placentae)
- Premature rupture of membranes
- Anemia during pregnancy
- Preeclampsia/eclampsia

The following infant characteristics are associated with a higher incidence of sudden infant death. While these factors may not be modifiable, it is especially important to create a safe sleep environment for these infants.

CHARACTERISTICS OF THE INFANT (0-12 MONTHS OF AGE)

- Male sex of infant
- Twins
- Infant development or size
 - Low birth weight or small for gestational age
 - Shorter gestational age at birth
 - Poor infant growth rate
- Infant age 1-6 months (peak 2-4 months)
- Infant illness or congenital conditions

Created by the RNAO Expert Panel, 2012

Appendix E: Preventing and Decreasing Progression of Positional Plagiocephaly

Tips:

1. Parents/caregivers are encouraged to continue to place the baby on their back to sleep for all sleeps.
2. Parents/caregivers are encouraged to alternate the infant's head position in the crib, in the supine position. This can be achieved by changing the direction in which the infant lies in the crib every few days; feet pointing at one end of the crib for a few days, at the other end of the crib for the next few days and so on. This may reduce the tendency to a right or left facing preference. It is NOT necessary to change an infant's head position when they are sleeping. No positioning aids should be used to position the head.
3. Parents/caregivers are encouraged to decrease the amount of time the waking baby spends in a supine position where head movement is restricted i.e.: car seats, swings and chairs.
4. While baby is awake, parents/caregivers are encouraged to provide lots of "cuddle time" and holding the baby.
5. Parents/caregivers are encouraged to provide short and frequent opportunities for tummy time every day while the baby is awake and supervised.

Other Considerations:

- Behavioural modifications are most effective before the age of five to six months.
- Positional plagiocephaly is benign in a well baby but it is important to rule out other more serious reasons for condition such as craniosynostosis or torticollis. Further testing may be required to confirm diagnosis.
- Other treatments such as physiotherapy or cranial molding-helmet may be required if behaviour modification is not enough to correct the condition.

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Appendix F: Temperature Control in Infants

Newborns are Different from Older Infants as

- they have a higher value of the ratio between the skin surface area and the body mass,
- they have less tissue insulation and
- they experience more heat loss to the environment.

As a consequence, in a cold environment, newborns can rapidly become hypothermic (reviewed in Bach et al., 1996). This will be even more important for a prematurely born infant. In addition, the head is the site of 40% of heat production and of up to 85% of heat loss in an infant (Fleming et al. 1992). In the early neonatal period in hospital, and especially in prematurely born infants, hats are therefore used to decrease heat loss.

Control of temperature changes rapidly in the first few months of life. By three months of age, infants are in general very well able to thermoregulate in normal room temperature (room temperature comfortable for an adult). In a high temperature environment, or if they have too much covering, they may develop hyperthermia (Jardine, 1992); this is because young infants cannot remove blankets or duvets or moved out of an environment that is too hot.

During an illness with fever, the thermoregulatory mechanisms are challenged with an increase in metabolic rate. This could make the infant vulnerable especially if the infant is in an environment where heat cannot be dissipated – too many blankets or head covered (Fleming et al. 2006). Gilbert et al. (2012) showed that in infants older than 70 days, the combination of viral infection and clothing and bedding that provide important thermal insulation was associated with a significantly increased risk of sudden death.

In summary, term newborns and prematurely born infants are at risk of being too cold and older infants are at risk of being too hot, especially if they have fever.

Parent's Control of Bedding and Clothing

Most mothers can accurately achieve the optimal environment (thermoneutral environment) for their infant's sleep (choice of room temperature and bedding) (Wigfield et al, 1993). A factor that adversely influenced this choice is the smoking status of the mother: infants of smoking mothers are most commonly in warmer environment with more bedding and clothing. The reason for that is unknown.

Insulation Provided by Clothing

In many publications, authors give a 'tog unit' for bedding or clothing. Tog units are units of measure of thermal insulation used in the textile industry. The higher the tog value, the less heat can be dissipated through the material (bedding, piece of clothing). Most pieces of clothing for infants have a tog value of 1 or 2. A sleeping suit and an infant duvet have a value of 4 and an adult duvet a value of 10 to 13. (Fleming, 2006).

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Appendix G: Description of the Toolkit

Best practice guidelines can only be successfully implemented if planning, resources, organizational and administrative supports are adequate and there is appropriate facilitation. In this light, the Registered Nurses' Association of Ontario, through a panel of nurses, researchers and administrators, has developed the Toolkit: Implementation of Best Practice Guidelines (2nd ed.) (2012). The Toolkit is based on available evidence, theoretical perspectives and consensus. We recommend the Toolkit for guiding the implementation of any clinical practice guideline in a health-care organization.

The Toolkit provides step-by-step directions to individuals and groups involved in planning, coordinating and facilitating the guideline implementation. These steps reflect a process that is dynamic and iterative rather than linear. Therefore, at each phase, preparation for the next phases and reflection on the previous phase is essential. Specifically, the Toolkit addresses the following key steps, as illustrated in the “Knowledge to Action” framework (RNAO, 2012; Straus, Tetroe, Graham, Zwarenstein, & Bhattacharyya, 2009) in implementing a guideline:

1. Identify problem: identify, review, select knowledge (Best Practice Guideline).
2. Adapt knowledge to local context:
 - Assess barriers and facilitators to knowledge use; and
 - Identify resources.
3. Select, tailor and implement interventions.
4. Monitor knowledge use.
5. Evaluate outcomes.
6. Sustain knowledge use.

Implementing guidelines in practice that result in successful practice changes and positive clinical impact is a complex undertaking. The Toolkit is one key resource for managing this process. The Toolkit can be downloaded at <http://RNAO.ca/bpg>.

Appendix H: Additional Resources

- American Academy of Pediatrics
<http://www.aap.org/>
- Baby Friendly Initiative (World Health Organization and Unicef) <http://www.unicef.org.uk/BabyFriendly/>
- Canadian Foundation for the Study of Infant Deaths <http://www.sidscanada.org>
- Canadian Paediatric Society
Main page: <http://www.cps.ca>
Parent information: <http://www.caringforkids.cps.ca/>
- CPSCUS Consumer Product Safety Commission. Crib Safety Tips: use Your Crib Safely. Washington, DC: US Consumer Product Safety Commission. CPSC document 5030
- Eunice Kennedy Shriver National Institutes of Health and Human Development (NICHD)
<http://www.nichd.nih.gov/>
- Health Canada
<http://www.hc-sc.gc.ca/cps-spc/index-eng.php>
- Healthy Canadians
<http://www.healthycanadians.gc.ca/>
- Public Health Agency of Canada
<http://www.phac-aspc.gc.ca/>

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